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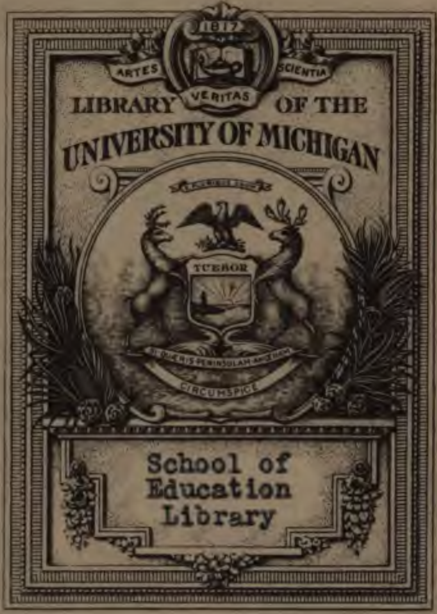

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WITH

ANNOTATIONS

BY

GEO. P. BROWN.

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COMMITTEE OF FIFTEEN.

REPORT OF THE SUB-COMMITTEE ON THE CORRELATION OF STUDIES IN ELEMENTARY EDUCATION.

The undersigned Committee agrees upon the following report, each member reserving for himself the expression of his individual divergence from the opinion of the majority, by a statement appended to his signature, enumerating the points to which exception is taken and the grounds for them. [1]

I. CORRELATION OF STUDIES.

Your Committee understands by correlation of studies:

1. Logical order of topics and branches.

First, the arrangement of topics in proper sequence in the course of study, in such a manner that each branch develops in an order suited to the natural and easy progress of the child, and so that each step is taken at the proper time to help his advance to the next step in the same branch, or to the next steps in other related branches of the course of study.[2]

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[1] The author of this report uses the word Correlation in its generally accepted sense of reciprocal relation. The things here related are the studies in the school, and life in the social order. What are the mutual relations between these? Evidently those of science to art. The social order is the art of which the school studies are the science. The problem of the school is to so master these sciences that their application to the art of living shall be easy and natural. The life of the community is these school studies animated by will and touched with feeling. What is the value of each study in preparing for living in the civilization of which the child is a member? The chief purpose of this report is to answer this question. The full discussion of these values demands that some consideration be given to cö-ordination of these studies in the school and the method of teaching them, and this is done throughout the report, though very briefly and imperfectly.

[2] This first definition is very imperfect in that it considers only the order of the sequence of topics within the respective groups of like subjects; for example, Arithmetic, Algebra, and Geometry in Mathematics. But having determined what studies in each group should go into the

2. *Symmetrical whole of studies in the world of human learning.*

Second, the adjustment of the branches of study in such a manner that the whole course at any given time represents all the great divisions of human learning, as far as is possible at the stage of maturity at which the pupil has arrived, and that each allied group of studies is represented by some one of its branches best adapted for the epoch in question; it being implied that there is an equivalence of studies to a greater or less degree within each group, and that each branch of human learning should be represented by some equivalent study; so that, while no great division is left unrepresented, no group shall have superfluous representatives and thereby debar other groups from a proper representation.[3]

3. *Psychological symmetry—the whole mind.*

Third, the selection and arrangement of the branches and topics within each branch considered pyschologically with a view to afford the best exercise of the faculties of the mind, and to secure the unfolding of those faculties in their natural order, so that no one faculty is so overcultivated or so neglected as to produce abnormal or one-sided mental development.[4]

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elementary schools, the questions in what order, and at what stage of progress each shall be introduced becomes important as questions of method.

[3] The second definition considers Correlation on the basis of the co-ordination of the different groups of studies, so that the pupil's view of life may be comprehensive at every step and not limited to the studies of a single group. Let the pupil look through all "of the five windows of the soul" at every stage of his progress. The relative importance of the view from each of these five windows is not considered. That is, the actual value of each study in the art of living is ignored. The same time and energy might be given to the representative study pursued in each group, without disregarding this definition of Correlation.

[4] The third basis of correlation is taken from the point of view of the mind to be educated. It is therefore purely subjective, the child's relation to the world not being considered. The question here is what studies, and in what order, will best develop the different faculties? It is considered of minor importance what the content of the studies

4. *Correlation of pupil's course of study with the world in which he lives—his spiritual and natural environment.*

Fourth and chiefly, your Committee understands by correlation of studies the selection and arrangement in orderly sequence of such objects of study as shall give the child an insight into the world that he lives in, and a command over its resources such as is obtained by a helpful co-operation with one's fellows. In a word, the chief consideration to which all others are to be subordinated, in the opinion of your Committee, is this requirement of the civilization into which the child is born, as determining not only what he shall study in school, but what habits and customs he shall be taught in the family before the school age arrives; as well as that he shall acquire a skilled acquaintance with some one of a definite series of trades, professions, or vocations in the years that follow school; and, furthermore, that this question of the relation of the pupil to his civilization determines what political duties he shall assume and what religious faith or spiritual aspirations shall be adopted for the conduct of his life.

To make more clear their reasons for the preference here expressed for the objective and practical basis of selection of topics for the course of study, rather than the subjective basis so long favored by educational writers, your Committee would describe the psychological basis, already mentioned, as being merely formal in its character, relating only to the exercise of the so-called mental faculties.

It would furnish a training of spiritual powers analogous to the gymnastic training of the muscles of the body. Gymnastics may develop strength and agility without leading to any skill in trades or useful employment. So an abstract psychological training may develop the will, the intellect, the imagination, or the memory, but without leading to an exercise of acquired power in the interests of civilization. The

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may be, provided they give the discipline needed at the particular period of growth considered. In this view it is one's theory of the nature and activities of the mind and of their mutual relations that would determine the studies he should select. The purpose of the correlation here considered is to *form* the mind without much regard to *furnishing* it. It is the reciprocal relation between the studies and the mental faculties that is regarded.

game of chess would furnish a good course of study for the discipline of the powers of attention and calculation of abstract combinations, but it would give its possessor little or no knowledge of man or nature. The psychological ideal which has prevailed to a large extent in education has in the old phrenology, and in the recent studies in physiological psychology, sometimes given place to a biological ideal. Instead of the view of mind as made up of faculties like will, intellect, imagination, and emotion, conceived to be all necessary to the soul if developed in harmony with one another, the concept of nerves or brain-tracts is used as the ultimate regulative principle to determine the selection and arrangement of studies. Each part of the brain is supposed to have its claim on the attention of the educator, and that study is thought to be the most valuable which employs normally the larger number of brain-tracts. This view reaches an extreme in the direction of formal as opposed to objective or practical grounds for selecting a course of study. While the old psychology with its mental faculties concentrated its attention on the mental processes and neglected the world of existing objects and relations upon which those processes were directed, physiological psychology tends to confine its attention to the physical part of the process, the organic changes in the brain cells and their functions.

Your Committee is of the opinion that psychology of both kinds, physiological and introspective, can hold only a subordinate place in the settlement of questions relating to the correlation of studies. The branches to be studied, and the extent to which they are studied, will be determined mainly by the demands of one's civilization. These will prescribe what is most useful to make the individual acquainted with physical nature and with human nature so as to fit him as an individual to perform his duties in the several institutions—family, civil society, the state, and the Church. But next after this, psychology will furnish important considerations that will largely determine the methods of instruction, the order of taking up the several topics so as to adapt the school work to the growth of the pupil's capacity, and the amount of work so as not to overtax his powers by too much or arrest the development of strength by too little. A vast number of subordinate details belonging to the pathology of education, such as the hygienic features of school architecture and furniture, programmes, the length of study hours and of class exercises, recreation, and bodily reactions against mental effort, will be finally settled by scientific experiment in the department of physiological psychology.

Inasmuch as your Committee is limited to the consideration of the correlation of studies in the elementary school, it has considered the question of the course of study in general only in so far as this has been found necessary in discussing the grounds for the selection of studies for the period of school education occupying the eight years from six to fourteen years, or the school period between the kindergarten on the one hand and the secondary school on the other. It has not been possible to avoid some inquiry into the true distinction between secondary and elementary studies, since one of the most important questions forced upon the attention of your Committee is that of the abridgment of the elementary course of study from eight or more years to seven or even six years, and the corresponding increase of the time devoted to studies usually assigned to the high school and supposed to belong to the secondary course of study for some intrinsic reason.[5]

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[5] This is a wonderfully clear, though brief, presentation of the function of the school and of psychology in realizing that function. It will be accused of giving too little importance to physiological psychology. The author of this report has elsewhere elaborated more fully the relative values of the old and new psychology. (See article in *Public-School Journal*, June, 1895.)

In none of these definitions of correlation has the report considered that use of the word which holds it to mean such an organization of the studies in the practice of teaching as will make one or more centers around which the other studies may be grouped. Some of the Herbartians, so-called, would make history and literature the core studies in the curriculum, for example, and teach all the others as, in a measure, subordinate to these. What man has thought and done is held to be the most valuable knowledge-content for education, and the instruments that he has used in his thinking and doing are of subordinate value. Others would make the nature studies the important, or, at least, the initial studies, and learn arithmetic, language, literature, etc., as the study of science suggests. Others, still, would make three groups—nature studies, human studies, and mathematics—and tie these groups together where they touch each other. It was the understanding of those who were making a study of correlation in

II. THE COURSE OF STUDY—EDUCATIONAL VALUES.

Your Committee would report that it has discussed in detail the several branches of study that have found a place in the curriculum of the elementary school, with a view to discover their educational value for developing and training the faculties of the mind, and more especially for correlating the pupil with his spiritual and natural environment in the world in which he lives.

A. Language studies.

There is first to be noted the prominent place of language study that takes the form of reading, penmanship, and grammar in the first eight years' work of the school. It is claimed for the partiality shown to these studies that it is justified by the fact that language is the instrument that makes possible human social organization. It enables each person to communicate his individual experience to his fellows and thus per-

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this sense that the report of this Committee was to discuss chiefly this meaning of correlation. Much of the opposition that followed the presentation of the report to the convention of superintendents at Cleveland arose from this misunderstanding. The report really discusses the function of the studies with occasional reference to the method of realizing their values in the school. The other view would have made the method of realizing these values the subject of the report, with occasional reference to the function of the studies in education.

It may be well to suggest, in view of some published criticisms on this report, that the author had in mind that the school should prepare for what is ideally involved in our civilization, rather than subjection to its actual limitations. Some seem to have supposed that he would make the school the means of perpetuating the imperfections of the social organism rather than of removing them. (See editorial in *The New York School-Journal* of April 6, 1895.) The ideal to which the present civilization points is certainly a fitting aim for the schools to seek to realize. John Stuart Mills' definition of the aim of education, that it should seek to maintain the advancement that has been made and, if possible, improve it, is similar to the one involved in this report. The civilization of any period is an exponent of the average intellectual and moral character of the citizens. This average is to be raised by making the ideals of the civilization, as well as its present established order, subjects of study in the education of the child and in the subsequent education of the adult.

mits each to profit by the experience of all. The written and printed forms of speech preserve human knowledge and make progress in civilization possible. The conclusion is reached that learning to read and write should be the leading study of the pupil in his first four years of school.[6]

Reading and writing are not so much ends in themselves as means for the acquirement of all other human learning. This consideration alone would be sufficient to justify their actual place in the work of the elementary school. But these branches require of the learner a difficult process of analysis. The pupil must identify the separate words in the sentence he uses, and in the next place must recognize the separate sounds in each word. It requires a considerable effort for the child or the savage to analyze his sentence into its constituent words, and a still greater effort to discriminate its elementary sounds. Reading, writing, and spelling in their most elementary form, therefore, constitute a severe training in mental analysis for the child of six to ten years of age. We are told that it is far more disciplinary to the mind than any species of observation of differences among material things, because of the fact that the word has a twofold character—addressed to external sense as spoken sound to the ear, or as written and printed words to the eye—but containing a meaning or sense addressed to the understanding and only to be seized by introspection. The pupil must call up the corresponding idea by thought, memory, and imagination, or else the word will cease to be a word and remain only a sound or character.

On the other hand, observation of things and movements does not necessarily involve this twofold act of analysis, introspective and objective, but only the latter—the objective analysis. It is granted that we all have frequent occasion to condemn poor methods of instruction as teaching words rather than things. But we admit that we mean empty sounds or characters rather than true words. Our suggestions for the correct method of teaching amount in this case simply to laying stress on the meaning of the word, and to setting the teaching process on the road of analysis of content rather than form. In the case of words used to store up external observation the teacher is told to repeat and make alive again the act of observation by which the word obtained its original meaning. In the case of a word expressing a relation between facts or events, the pupil is to be taken step by step through the process of reflection by which the idea was built up. Since the word, spoken and written, is the sole instrument by which reason can fix, preserve, and communicate both the data of sense and the relations discovered between them by reflection, no new method in education has been able to supplant in the school the branches, reading and penmanship. But the real improvements in method have led teachers to lay greater and greater stress on the internal factor of the word, on its meaning, and have in manifold ways shown how to repeat the original experiences that gave the meaning to concrete words, and the original comparisons and logical deductions by which the ideas of relations and causal processes arose in the mind and required abstract words to preserve and communicate them.[7]

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[6] The author's definition of language, which is "a synthesis of thing and thought—of outward sign and inward signification," should be kept prominently in mind in studying this section on language studies. It is in the light of this definition that the author's statement that the leading study of the pupil in the first four years is reading and writing, must be interpreted. Indeed, the leading purpose of the entire school course is to enable the pupils to *read*, meaning by that to interpret the printed page. It is because children cannot interpret the printed page, even after they graduate from the high school, that the young people of today find so little interest in reading good books, and find their school course of so little value to them.

It has been claimed that it would be better to have first a basis of knowledge of things, and secondarily and subsequently a knowledge of words. But it has been replied to this, that the progress of the child in learning to talk indicates his ascent out of mere impressions into the possession of true knowledge. For he names objects only after he has made some synthesis of his impressions and has formed general ideas. He recognizes the same object under different circumstances of time

[7] This discussion must not be interpreted as an argument against the observation of external things and movements, but as a defense of language study against the wild assertions and declamations that have been made against it in recent years. These declamations should be directed toward the *poor teaching* of language. It is not by burning the grammar but by properly *teaching* it that our language instruction is to be improved.

and place, and also recognizes other objects belonging to the same class by and with names. Hence the use of the word indicates a higher degree of self-activity—the stage of mere impressions without words or signs being a comparatively passive state of mind. What we mean by things first and words afterward, is, therefore, not the apprehension of objects by passive impressions so much as the active investigation and experimenting which come after words are used and the higher forms of analysis are called into being by that invention of reason known as language, which, as before said, is a synthesis of thing and thought, of outward sign and inward signification.

Rational investigation cannot precede the invention of language any more than blacksmithing can precede the invention of hammers, anvils, and pincers. For language is the necessary tool of thought used in the conduct of the analysis and synthesis of investigation.[8]

Your Committee would sum up these considerations by saying that language rightfully forms the center of instruction in the elementary school, but that progress in methods of teaching is to be made, as hitherto, chiefly by laying more stress on the internal side of the word, its meaning; using better graded steps to build up the chain of experience or the train of thought that the word expresses.[9]

The first three year's work of the child is occupied mainly with the mastery of the printed and written forms of the words of his colloquial vocabulary; words that he is already familiar enough with as sounds addressed to the ear. He has to become familiar with the new forms addressed to the eye, and it would be an unwise method to require him to learn many new words at the same time that he is learning to recognize his old words and their new shape, But as soon as he has acquired, before three years, some facility in reading what is printed in the colloquial style, he may go on to selections from standard authors.[10]

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[8] This criticism on the maxim, "Things before words," is a valid one. The maxim is directed toward a too prevalent practice of the study of words without things, and, like all maxims, it is as false as the thing against which it is directed. What we are really seeking is the meaning *and* the word. One is of no value without the other in the education of the child. There is no such thing as a valuable observation and investigation of natural objects without language in which to embody the results at every step.

[9] This is substantially the view of the Herbartians, as regards the function of language studies. It contains, however, an implied criticism on the claim, so often set up, that what good teachers have been doing and are doing has no validity. What the language instruction needs is that greater stress be laid upon the *meaning* of language. The *methods* of doing this may differ, but all agree that it must be done.

[10] Most good teachers will enter a strong protest against the first sentence of this paragraph. To them it will seem to advocate the dead formalism that is blighting so many primary schools. If the statement had been that the first three years' work is occupied mainly with the mastery of printed composition of an interesting and educative content, expressed in words of his colloquial vocabulary, and with the oral and written expression of his own thoughts concerning this and other matters, while emphasizing the fact that a knowledge of form must keep pace with the knowledge of meaning in accordance with the suggestion in the preceeding paragraph, they would have been accepted it without protest. It is such statements as this, which occur occasionally in this report, that give comfort to the mechanical teacher who is satisfied with the mere forms of knowledge, and that make those grieve who are striving to interest the child in both meaning and form from the beginning of his school life. That the early months of the child's school experience must be mainly devoted to the new sight forms of language which the school is to use is true, but that *three years* are to be spent chiefly in the mastery of the printed and written *forms* of his colloquial vocabulary is past all believing! It would seem as if the declaration that a child should learn no new words *for three years* would need no refutation. It is a proposition too absurd for serious consideration. The fact is that with good teaching the child learns many new words, both form and content, that are not in his colloquial vocabulary, in the first year of his school life.

The commanding purpose of this and the following paragraph is to establish the value of the ordinary text-book in reading. It is an able defense of the prominent place it has held for years among school material. It will be noted that it bases the value of the reading book upon the fact that the selections in it are literary wholes, as well as upon the artistic excellence of the selections. It has been the argument of those who have opposed the "scrappy reading books" that they did not contain complete literary wholes. There seems to be no difference of opinion between this report and those who oppose the reading book as to the desirableness of complete works of literature for use in the reading classes. The question raised by the report is whether the selections in the readers are such literary wholes as are best fitted for the purpose for which they are used.

The foolish practice of substituting the reading of current events for literature in the upper grades of our elementary schools, which prevails in some localities, is not thought worthy of mention. It is one of those unwise efforts to counteract poor teaching by introducing worthless material, because it is supposed to be more interesting to young people.

The literary selections should be graded, and are graded in almost all series of readers used in our elementary schools, in such a way as to bring those containing the fewest words outside of the colloquial vocabulary into the lower books of the series, and increasing the difficulties step by step as the pupil grows in maturity. The selections are literary works of art possessing the required organic unity and a proper reflection of this unity in the details, as good works of art must do. But they portray situations of the soul, or scenes of life, or elaborated reflections, of which the child can obtain some grasp through his capacity to feel and think, although in scope and compass they far surpass his range. They are adapted, therefore, to lead him out of and beyond himself, as spiritual guides.

Literary style employs, besides words common to the colloquial vocabulary, words used in a semi-technical sense expressive of fine shades of thought and emotion. The literary work of art furnishes a happy expression for some situation of the soul, or some train of reflection hitherto unutterable in an adequate manner. If the pupil learns this literary production, he finds himself powerfully helped to understand both himself and his fellow-men. The most practical knowledge of all, it will be admitted, is a knowledge of human nature—a knowledge that enables one to combine with his fellow-men and to share with them the physical and spiritual wealth of the race. Of this high character as humanizing or civilizing, are the favorite works of literature found in the school readers, about one hundred and fifty English and American writers being drawn upon for the material. Such are Shakespeare's speeches of Brutus and Mark Anthony, Hamlet's and Macbeth's soliloquies, Milton's L'Allegro and Il Penseroso, Gray's Elegy, Tennyson's Charge of the Light Brigade and Ode on the Death of the Duke of Wellington, Byron's Waterloo, Irving's Rip Van Winkle, Webster's reply to Hayne, the trial of Knapp, and Bunker Hill oration, Scott's Lochinvar, Marmion, and Roderick Dhu, Bryant's Thanatopsis, Longfellow's Psalm of Life, Paul Revere, and The Bridge, O'Hara's Bivouac of the Dead, Campbell's Hohenlinden, Collins' How Sleep the Brave, Wolfe's Burial of Sir John Moore, and other fine prose and poetry from Addison, Emerson, Franklin, The Bible, Hawthorne, Walter Scott, Goldsmith, Wordsworth, Swift, Milton, Cooper, Whittier, Lowell, and the rest. The reading and study of fine selections in prose and verse furnish the chief æsthetic training of the elementary school. But this should be re-enforced by some study of photographic or other reproductions of the world's great masterpieces of architecture, sculpture, and painting. The frequent sight of these reproductions is good; the attempt to copy or sketch them with the pencil is better; best of all is an æsthetic lesson on their composition, attempting to describe in words the idea of the whole that gives the work its organic unity, and the devices adopted by the artist to reflect this idea in the details and re-enforce its strength. The æsthetic taste of teacher and pupil can be cultivated by such exercises, and once set on the road of development this taste may improve through life.[11]

A third phase of language study in the elementary school is formal grammar. The works of literary art in the readers, re-enforced as they ought to be by supplementary reading at home of the whole works from which the selections for the school readers are made, will educate the child in the use of a higher and better English style. Technical grammar never can do this. Only familiarity with fine English works will insure one a good and correct style. But grammar is the science of language, and as the first of the seven liberal arts it has long held sway in school as the disciplinary study *par excellence.* A survey of its educational value, subjective and objective, usually produces the conviction that it is to retain the first place in the future. Its chief objective advantage is that it shows the structure of language, and the logical forms of subject, predicate, and modifier, thus revealing the essential nature of thought itself, the most important of all objects because it is self-object. On the subjective or psychological side, grammar demonstrates its title to the first place by its use as a discipline in subtle analysis, in logical division and classification, in the art of questioning, and in the mental accomplishment of making exact definitions. Nor is this an empty, formal discipline, for its subject matter, language, is a product of the reason of a people not as individuals but as a social whole, and the vocabulary holds in its store of words the generalized experience of that people, including sensuous observation and reflection, feeling and emotion, instinct and volition.[12]

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[11] The absence of any reference here or elsewhere in this report to the use of that material known as child literature, other than what may be found in the reading books, will be criticised by many. The idea of literature in this discussion seems to be limited to the best that has been thought, clothed in artistic form. It will be considered an error not to recognize the helpfulness in education of the best juvenile literature also. There is, besides, a prevailing idea that there are stages in the child's growth so different as to call for a special kind of literature in each. How much of truth there is in this idea of "culture epochs" is not yet clearly made out, but that there is some truth in it all admit. Whatever may be true of our advanced readers it is certainly true that the primary readers are "scrappy" and have a content of little literary worth. They are too often constructed for the sole purpose of teaching the child "the printed forms of the words in his coloquial vocabulary" and for nothing else. The reading and telling of folk-lore and fairy stories, fables, stories of adventure and the like are an important part of language studies in the lower grades. Then, too, as is pointed out by Mr. Gilbert, a member of this sub-committee, the need of training in oral and written composition in the lower grades is not mentioned. These omissions seem to indicate a want of recognition in this report of recent improvements in methods of teaching language, unless we fill out to include these what is involved in the general statement that "progress in methods of teaching is to be made, as hitherto, chiefly by laying more stress on the internal side of the word, its meaning."

[12] This statement of the value of grammar, in a scheme of education, is both able and convincing. The danger of pursuing the technical study of it to the neglect of the more important literary content which these language forms embody is also clearly set forth and is a timely warning. Would it be too much to say that no better defense of grammar in the school curriculum has ever been made? It was evidently written in reply to a demand that grammar be enpunged from the common school course, and its influence will be to establish this study firmly in some stage of school instruction. But in what stage? When we examine the programme of daily recitations recommended by this report we discover that the text-book study of formal grammar is to begin in the middle of the fifth year and extend to the end of the seventh. But few will accept this recommendation. Oral grammar with composition lessons to the middle of the fifth year, and text-book study, five lessons per week, till the eighth! The pupil must bring to this study a maturity that comes from age, and the organization of a pretty large mass of apperceiving ideas if he is to come into any mastery of it. The report declared, on page 11, that the child must not be asked to read matter containing new words before he is ten years of age because he cannot learn new ideas and new forms at the same time. But when he is only one year and a half older he is thought able

No formal labor on a great objective field is ever lost wholly, since at the very least it has the merit of familiarizing the pupil with the contents of some one extensive province that borders on his life, and with which he must come into correlation; but it is easy for any special formal discipline, when continued too long, to paralyze or arrest growth at that stage. the overcultivation of the verbal memory tends to arrest the growth of critical attention and reflection. Memory of accessory details too, so much prized in the school, is also cultivated often at the expense of an insight into the organizing principle of the whole and the causal nexus that binds the parts. So too, the study of quantity, if carried to excess, may warp the mind into a habit of neglecting quality in its observation and reflection. As there is no subsumption in the quantitative judgment but only dead equality or inequality (A is equal to or greater or less than B), there is a tendency to atrophy in the faculty of concrete syllogistic reasoning on the part of the person devoted exclusively to mathematics. For the normal syllogism uses judgments wherein the subject is subsumed under the predicate (This is a rose—the individual rose is subsumed under the class rose; Socrates is a man, etc.) Such reasoning concerns individuals in two aspects, first as concrete wholes and secondly as members of higher totalities or classes—species and genera. Thus, too, grammar, rich as it is in its contents, is only a formal discipline as respects the scientific, historic, or literary contents of language, and is indifferent to them. A

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to enter upon the text-book study of formal grammar, with the view of obtaining from this study the culture described. Of course this recommendation was made with a full knowledge of the kind of text-books in grammar that are supplied the schools. It would require a skilled teacher in every case to prevent the dull, mechanical, worthless grammatical (?) grind that is now a positive curse in so many schools. The formal teacher will shelter himself behind this recommendation, and go on in the same old way, worse than wasting both time and energy. Let it be borne in mind that this report defines grammar to be the *science* of language. It is the least concrete of all the school studies, as this discussion shows. Certainly much can be done before the seventh school year, incidentally to the literature and language study adapted to the child's intelligence, to give the pupil a knowledge of the technical vocabulary and of the construction of sentences, but a formal text-book study of English grammar will be of little value in grades below the seventh.

training for four or five years in parsing and grammatical analysis practiced on literary works of art (Milton, Shakspeare, Tennyson, Scott) is a training of the pupil into habits of indifference toward and neglect of the genius displayed in the literary work of art, and into habits of impertinent and trifling attention to elements employed as material or texture, and a corresponding neglect of the structural form which alone is the work of the artist. A parallel to this would be the mason's habit of noticing only the brick and mortar, or the stone and cement, in his inspection of the architecture, say of Sir Christopher Wren. A child overtrained to analyze and classify shades of color—examples of this one finds occasionally in a primary school whose specialty is "objective teaching"—might in later life visit an art gallery and make an inventory of colors without getting even a glimpse of a painting as a work of art. Such overstudy and misuse of grammar as one finds in the elementary school, it is feared, exists to some extent in secondary schools and even in colleges in the work of mastering the classic authors.[13]

Your Committee is unanimous in the conviction that formal grammar should not be allowed to usurp the place of a study of the literary work of art in accordance with literary method. The child can be gradually trained to see the technical "motives" of a poem or prose work of art and to enjoy the æsthetic inventions of the artist. The analysis of a work of art should discover the idea that gives it organic unity; the collision and the complication resulting; the solution and *dénouement.* Of course these things must be reached in the elementary school without even a mention of their technical terms. The subject of the piece is brought out; its reflection in the conditions of the time and place to heighten interest by showing its importance; its second and stronger reflection in the several details of its conflict and struggle; its reflection in the *dénouement* wherein its struggle ends in victory or defeat and the ethical or rational interests are vindicated—and the results move outward, returning to the environment again in ever-widening circles—something resembling this is to be found in every work of art, and there are salient features which can be briefly but profitably made subject of comment in familiar language with even the youngest pupils. There is an ethical and an æsthetical content to each work of art. It is profitable to point out both of these in the interest of the child's growing insight into human nature. The ethical should, however, be kept in subordination to the æsthetical, but for the sake of the supreme interests of the ethical itself. Otherwise the study of a work of art degenerates into a goody-goody performance, and its effects on the child are to cause a reaction against the moral. The child protects his inner individuality against effacement through external authority by taking an attitude of rebellion against stories with an appended moral. Herein the superiority of the æsthetical in literary art is to be seen. For the ethical motive is concealed by the poet, and the hero is painted with all his brittle individualism and self-seeking. His passions and his selfishness, gilded by fine traits of bravery and noble manners, interest the youth, interest us all. The established social and moral order seems to the ambitious hero to be an obstacle to the unfolding of the charms of individuality. The deed of violence gets done, and the Nemesis is aroused. Now his deed comes back on the individual doer, and our sympathy turns against him and we rejoice in his fall. Thus the æsthetical unity contains within it the ethical unity. The lesson of the great poet or novelist is taken to heart, whereas the ethical announcement by itself might have failed, especially with the most self-active and aspiring of the pupils. Aristotle pointed out in his Poetics this advantage of the æsthetic unity, which Plato in his Republic seems to have missed. Tragedy purges us of our passions, to use Aristotle's expression, because we identify our own wrong inclinations with those of the hero, and by sympathy we suffer with him and see our intended deed returned upon us with tragic effect, and are thereby cured.[14]

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[13] Never in the history of pedagogical writing has so clear and convincing a statement been made of the disastrous results to the child of formal discipline in paralyzing his powers or arresting his growth when continued too long. It is a new analysis and criticism of the dead formalism that is blighting elementary education in so many places. This is an application of psychological knowledge not before made that will give this report great influence in improving our educational methods. Every thoughtful teacher can see at once how it is true that a study of the common school branches may be made a curse to the children by making bond slaves of them. Col. Parker has said repeatedly that to limit the teaching in the common schools to the three R's was to enslave the children and not to liberate them. This paragraph shows why

Your committee has dwelt upon the æsthetic side of literature in this explicit manner because they believe that the general tendency in elementary schools is to neglect the literary art for the literary formalities which concern the mechanical material rather than the spiritual form. Those formal studies should not be discontinued, but subordinated to the higher study of literature.

Your Committee reserves the subject of language lessons, composition writing, and what relates to the child's expression of ideas in writing, for consideration under Part 3 of this Report, treating of program.

B. Arithmetic.

Side by side with language study is the study of mathematics in the schools, claiming the second place in importance of all studies. It has been pointed out that mathematics concerns the laws of time and space—their structural form, so to speak—and hence that it formulates the logical conditions of all matter both in rest and in motion. Be this as it may, the high position of mathematics as the science of all quantity is universally acknowledged. The elementary branch of mathematics is arithmetic, and this is studied in the primary and grammar schools from six to eight years, or even longer. The relation of arithmetic to the whole field of mathematics has been stated (by Comte, Howison, and others) to be that of the final step in a process of calculation in which results are stated numerically. There are branches that develop or derive quantitative functions: say geometry for spatial forms, and mechanics for movement and rest and the forces producing them. Other branches transform these quantitative functions into such forms as may be calculated in actual numbers; namely, algebra in its common or lower form, and in its higher form as the differential and integral calculus, and the calculus of variations. Arithmetic evaluates or finds the numerical value for the functions thus deduced and transformed. The educational value of arithmetic is thus indicated both as concerns its psychological side and its objective practical uses in correlating man with the world of nature. In this latter respect as furnishing the key to the outer world in so far as the objects of the latter are a matter of direct enumeration,—capable of being counted,—it is the first great step in the conquest of nature.[15]

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[14] This presentation of the way to realize the ethical influence of literature and other art creations through the absorption of the pupil in the æsthetic element in them is worthy of the highest praise. A beautiful thing must be studied for its beauty of form and content and not for the moral lesson it teaches, if it shall teach its moral lesson effectively. The formula "This fable teaches," is not the way to use art to promote morals.

There is one omission in this discussion of language studies that will be noticed by many readers, and has been referred to already in these comments. While it urges the early study of classic literature it is silent about child literature. It seems to assume that the former is the only grade of literature worthy of the name. We believe it is a mistake to ignore the recent movement in education which seeks to interest the children in the "best that has been thought and said" on the plane of child culture and experience. There is a realm of the common-place and another of the higher life quite as real in children as in adults. In other words, there is a child-literature relatively as artistic and inspiring to children as literature proper is to men and women. It is by stimulating and nourishing the immature artistic and moral instincts of the child, that he comes to love the beautiful and the good in later years. The best educational practice in the country has recognized in fairy tales and stories for children a phase of language study which this report seems to have overlooked.

It is the first tool of thought that man invents in the work of emancipating himself from thraldom to external forces. For by the command of number he learns to divide and conquer. He can proportion one force to another, and concentrate against an obstacle precisely what is needed to overcome it. Number also makes possible all the other sciences of nature which depend on exact measurement and exact record of phenomena as to the following items: order of succession, date, duration, locality, environment, extent of sphere of influence, number of manifestations, number of cases of intermittence. All these can be defined accurately only by means of number. The educational value of a branch of study that furnishes the indispensable first step toward all science of nature is obvious. But psychologically its importance further appears in this, that it begins with an important step in analysis; namely, the detachment of the idea of quantity from the concrete whole which includes quality as well as quantity. To count, one drops the qualitative and considers only the quantitative aspect. So long as the individual differences (which are qualitative in so far as they distinguish one object from another) are considered, the objects cannot be counted together. When counted, the distinctions are dropped out of sight as indifferent. As counting is the fundamental operation of arithmetic, and all other arithmetical operations are simply devices for speed by using remembered countings instead of going through the detailed work again each time, the hint is furnished the teacher for the first lessons in arithmetic. This hint has been generally followed out and the child set at work at first upon the counting of objects so much alike that the qualitative difference is not suggested to him. He constructs gradually his tables of addition, subtraction, and multiplication, and fixes them in his memory. Then he takes his next higher step; namely, the apprehension of the fraction. This is an expressed ratio of two numbers, and therefore a much more complex thought than he has met with in dealing with the simple numbers. In thinking five-sixths he first thinks five and then six, and holding these two in mind thinks the result of the first modified by the second. Here are three steps instead of one, and the result is not a simple number but an inference resting on an unperformed operation. This psychological analysis shows the reason for the embarrassment of the child on his entrance upon the study of fractions and the other operations that imply ratio. The teacher finds all his resources in the way of method drawn upon to invent steps and half-steps to aid the pupil to make continuous progress here. All these devices of method consists in steps by which the pupil descends to the simple number and returns to the complex. He turns one of the terms into a qualitative unit and thus is enabled to use the other as a simple number. The pupil takes the denominator, for example, and makes clear his conception of one-sixth as his qualitative unit, then five-sixths is as clear to him as five oxen. But he has to repeat this return from ratio to simple numbers in each of the elementary operations—addition, subtraction, multiplication, and division, and in the reduction of fractions—and finds the road long and tedious at best. In the case of decimal fractions the psychological process is more complex still; for the pupil has given him one of the terms, the numerator, from which he must mentally deduce the denominator from the position of the decimal point. This doubles the work of reading and recognizing the fractional number. But it makes addition and subtraction of fractions nearly as easy as that of simple numbers and assists also in multiplication of fractions. But division of decimals is a much more complex operation than that of common fractions.

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[15] Arithmetic is the science of the numerical valuation of quantity. As an art it is finding how many times the unit of measure can be applied. The correlation between arithmetic and social life is so evident that, in the past, a large portion of the pupil's time has been spent in mastering it.

The want of a psychological analysis of these processes has led many good teachers to attempt decimal fractions with their pupils before taking up common fractions. In the end they have been forced to make introductory steps to aid the pupil and in these steps to introduce the theory of the common fraction. They have by this refuted their own theory.[16]

Besides (*a*) simple numbers and the four operations with them, (*b*) fractions common and decimal, there is (*c*) a third step in number; namely, the theory of powers and roots. It is

[16] This distinction between the qualitative and the quantitative unit is important to the understanding of this discussion of the educational value of arithmetic. A member of this sub-committee, Mr. Greenwood, dissents from the statement here made that a fraction is much more difficult for the child to comprehend than an integer, because in thinking a fraction three steps are involved. He affirms that the child gets the idea of half, third, etc., even before entering school. This is true, but the half which he thinks is a *qualitative* unit and not a fraction. It is one of the two equal parts of some concrete thing. The two units called halves make up the one unit called a whole. A fraction proper is the ratio between two numbers. It is the *ratio* of 5 to 6, and not five of the qualitative units, each call a sixth, that makes a fraction. The teachings of the report are undoubtedly true on this point but we believe that the child does all his thinking of fractions for some years by the use of qualitative units. If that be true, Mr. Greenwood's objection to the method suggested in the report is well taken. To apprehend what is involved in the word "ratio" requires the maturity of 7th and 8th grade pupils, and by this report, these have finished the study of arithmetic.

The discussion of the relation of arithmetic to algebra, geometry, and mechanics, in the first part of this section on arithmetic, is of great value and very suggestive, and ought to be understood by every teacher, even if some time and study are required to master it.

a further step in ratio, namely the relation of a simple number to itself as power and root. The mass of material which fills the arithmetic used in the elementary school consists of two kinds of examples, first, those wherein there is a direct application of simple numbers, fractions, and powers, and secondly the class of examples involving operations in reaching numerical solutions through indirect data and consequently involving more or less transformation of functions. Of this character is most of the so-called higher arithmetic and such problems in the text-book used in the elementary schools as have, not inappropriately, been called (by General Francis A. Walker in his criticism on common-school arithmetic), numerical "conundrums." Their difficulty is not found in the strictly arithmetical part of the process of the solution (the third phase above described), but rather in the transformation of the quantitative function given into the function that can readily be calculated numerically. The transformation of functions belongs strictly to algebra. Teachers who love arithmetic, and who have themselves success in working out the so-called numerical conundrums, defend with much earnestness the current practice which uses so much time for arithmetic. They see in it a valuable training for ingenuity and logical analysis, and believe that the industry which discovers arithmetical ways of transforming the functions given in such problems into plain numerical operations of adding, subtracting, multiplying, or dividing is well bestowed. On the other hand the critics of this practice contend that there should be no merely formal drill in school for its own sake, and that there should be, always, a substantial content to be gained.[17] They contend that the work of the pupil in transforming quantitative functions by arithmetical methods is wasted, because the pupil needs a more adequate expression than number for this purpose; that this has been discovered in algebra, which enables him to perform with ease such quantitative transformations as puzzle the pupil in arithmetic. They hold, therefore, that arithmetic pure and simple should be abridged and elementary algebra introduced after the numerical operations in powers, fractions, and simple numbers have been mastered, together with their applications to the tables of weights and measures and to percentage and interest. In the seventh year of the elementary course there would be taught equations of the first degree and the solution of arithmetical problems that fall under proportion or the so-called "rule of three," together with other problems containing complicated conditions—those in partnership for example. In the eighth year quadratic equations could be learned, and other problems of higher arithmetic solved in a more satisfactory manner than by numerical methods. It is contended that this earlier introduction of algebra, with a sparing use of letters for known quantities, would secure far more mathematical progress than is obtained at present on the part of all pupils, and that it would enable many pupils to go on into secondary and higher education who are now kept back on the plea of lack of preparation in arithmetic, the real difficulty in many cases being a lack of ability to solve algebraic problems by an inferior method.[18]

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[17] This criticism upon the practice in many good schools of making what is called a "thorough mastery" of one topic or subject before taking up another is convincing and opportune. The psychological effect of overtraining in any field of mental activity is set forth here and elsewhere in this report with great clearness. A false idea of thoroughness used to be practiced in certain normal schools where an exhaustive study of addition continuing for weeks was made before subtraction was begun, etc. The psychological principle of apperception is to furnish the key for the solution of more than one pedagogical problem, it is plain.

Your Committee would report that the practice of teaching two lessons daily in arithmetic, one styled "mental" or "intellectual" and the other "written" arithmetic (because its exercises are written out with pencil or pen) is still continued in many schools. By this device the pupil is made to give twice as much time to arithmetic as to any other branch. It is contended by the opponents of this practice, with some show of reason, that two lessons a day in the study of quantity have a tendency to give the mind a bent or set in the direction of thinking quantitatively with a corresponding neglect of the power to observe, and to reflect upon, qualitative and causal aspects. For mathematics does not take account of causes, but only of equality and difference in magnitude. It is further objected that the attempt to secure what is called thoroughness in the branches taught in the elementary schools is often carried too far; in fact, to such an extent as to produce arrested development (a sort of mental paralysis) in the mechanical and formal stages of growth. The mind in that case loses its *appetite* for higher methods and wider generalizations. The law of apperception, we are told, proves that temporary methods of solving problems should not be so thoroughly mastered as to be used involuntarily or as a matter of unconscious habit, for the reason that a higher and a more adequate method of solution will then be found more difficult to acquire. The more thoroughly a method is learned, the more it becomes part of the mind and the greater the repugnance of the mind toward a new method. For this reason parents and teachers discourage young children from the practice of counting on the fingers, believing that it will cause much trouble later to root out this vicious habit and replace it by purely mental processes. Teachers should be careful, especially with precocious children, not to continue too long in the use of a process that is becoming mechanical; for it is already growing into a second nature, and becoming a part of the unconscious apperceptive process by which the mind reacts against the environment, recognizes its presence, and explains it to itself. The child that has been overtrained in arithmetic reacts apperceptively against his environment chiefly by noticing its numerical relations—he counts and adds; his other apperceptive reactions being feeble, he neglects qualities and causal relations. Another child who has been drilled in recognizing colors apperceives the shades of color to the neglect of all else. A third child, excessively trained in form studies by the constant use of geometric solids and much practice in looking for the fundamental geometric forms lying at the basis of the multifarious objects that exists in the world, will as a matter of course apperceive geometric forms, ignoring the other phases of objects.

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[18] The wisdom of the recommendation that algebra take the place of arithmetic in the seventh and eighth grades will be questioned. It is true that the elementary number processes can be mastered below the seventh year, together with the simple applications to weights and measures, percentage, and interest, as the report suggests. It is also true that many of the "numerical conundrums" can be solved more easily by the numerical algebraic method suggested. But is it not a question whether the educational value of the study of arithmetic to the child is exhausted by the time he is twelve or thirteen years of age? The arithmetical problems are something more than "numerical conundrums." It is probable that most, if not all, elementary schools that introduce algebra will postpone it to the eighth year. There are some things in education that can be established only by experience, and it would seem that the experience of the past has confirmed the practice of beginning algebra at a later period than the seventh year. It is probable, however, that the discussion in this report will start experiment along a new line, for the purpose of testing the validity of the psychologic theory here set forth.

It is, certainly, an advance on immediate sense-perception to be able to separate or analyze the concrete, whole expression, and consider the quantity apart by itself. But if arrested mental growth takes place here the result is deplorable. That such arrest may be caused by too exclusive training in recognizing numerical relations is beyond a doubt.

Your Committee believes that, with the right methods, and a wise use of time in preparing the arithmetic lesson in and out of school, five years are sufficient for the study of mere arithmetic—the five years beginning with the second school year and ending with the close of the sixth year; and that the seventh and eighth years should be given to the algebraic method of dealing with those problems that involve difficulties in the transformation of quantitative indirect functions into numerical or direct quantitative data.

Your committee, however, does not wish to be understood as recommending the transfer of algebra, as it is understood and taught in most secondary schools, to the seventh year or even to the eighth year of the elementary school. The algebra course in the secondary school, as taught to pupils in their fifteenth year of age, very properly begins with severe exercises with a view to discipline the pupil in analyzing complex literate expressions at sight and to make him able to recognize at once the factors that are contained in such combinations of quantities. The proposed seventh-grade algebra must use letters for the unknown quantities and retain the numerical form of the known quantities, using letters for these very rarely, except to exhibit the general form of solution or what, if stated in words, becomes a so-called "rule" in arithmetic. This species of algebra has the character of an introduction or transitional step to algebra proper. The latter should be taught thoroughly in the secondary school. Formerly it was a common practice to teach elementary algebra of this sort in the preparatory schools and reserve for the college a study of algebra proper. But in this case there was often a neglect of sufficient practice in factoring literate quantities, and as a consequence the pupil suffered embarrassment in his more advanced mathematics, for example in analytical geometry, the differential calculus, and mechanics. The proposition of your Committee is intended to remedy the two evils already named: first to aid the pupils in the elementary school to solve, by a higher method, the more difficult problems that now find place in advanced arithmetic; and secondly, to prepare the pupil for a thorough course in pure algebra in the secondary school.

Your Committee is of the opinion that the so-called mental arithmetic should be made to alternate with written arithmetic for two years and that there should not be two daily lessons in this subject.[19]

C. Geography.

The leading branch of the seven liberal arts was grammar, being the first of the *Trivium* (grammar, rhetoric, and logic). Arithmetic, however, led the second division, the *Quadrivium* (arithmetic, geometry, music, and astronomy). We have glanced at the reasons for the place of grammar as leading the humane studies as well as for the place of arithmetic as leading the nature studies. Following arithmetic as the second study in importance among the branches that correlate man to nature is geography. It is interesting to note that the old quadrivium of the Middle Ages included geography, under the title of geometry, as the branch following arithmetic in the enumeration; the subject matter of their so-called "geometry" being chiefly an abridgment of Pliny's geography, to which were added a few definitions of geometric forms, something like the primary course in geometric solids in our elementary schools. So long as there has been elementary education there has been something of geography included. The Greek education laid stress on teaching the second book of Homer containing the

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[19] The wisdom of this suggestion will not be questioned by any unless it be by those who are specialists in arithmetic. And it is probable that the report's suggestion of a distorted apperception which is the result of early education and natural bent, will account for their dissent.

Catalogue of the Ships and a brief mention of the geography and history of all the Greek tribes that took part in the Trojan War. History remains unseparated from geography and geometry in the Middle Ages. Geography has preserved this comprehensiveness of meaning as a branch of the study in the elementary schools down to the present day. After arithmetic, which treats of the abstract or general conditions of material existence, comes geography with a practical study of man's material *habitat* and its relations to him. It is not a simple science by itself, like botany or geology or astronomy, but a collection of sciences levied upon to describe the earth as the dwelling-place of man and to explain something of its more prominent features. About one-fourth of the material relates strictly to the geography, about one-half to the inhabitants, their manners, customs, institutions, industries, productions, and the remaining one-fourth to items drawn from the sciences of mineralogy, meteorology, botany, zoölogy, and astronomy. This predominance of the human feature in a study ostensibly relating to physical nature, your Committee considers necessary and entirely justifiable. The child commences with what is nearest to his interests, and proceeds gradually toward what is remote and to be studied for its own sake. It is, therefore, a mistake to suppose that the first phase of geography presented to the child should be the process of continent formation. He must begin with the natural differences of climate and lands and waters and obstacles that separate peoples, and study the methods by which man strives to equalize or overcome these differences by industry and commerce, to unite all places and all people, and make it possible for each to share in the productions of all. The industrial and commercial idea is therefore the first central idea in the study of geography in the elenentary schools. It leads directly to the natural elements of difference in climate, soil, and productions, and also to those in race, religion, political status, and occupations of the inhabitants, with a view to explain the grounds and reasons for this counter-process of civilization which struggles to overcome the differences. Next comes the deeper inquiry into the process of continent formation, the physical struggle between the process of upheaving or upbuilding of continents and that of their obliteration by air and water; the explanation of the mountains, valleys, and plains, the islands, volcanic action, the winds, the rain-distribution. But the study of cities, their location, the purposes they serve as collecting, manufacturing, and distributing centers, leads most directly to the immediate purpose of geography in the elementary school. From this beginning, and holding to it as a permanent interest, the inquiry into causes and conditions proceeds concentrically to the sources of the raw materials, the methods of their production and the climatic, geologic, and other reasons that explain their location and their growth.

In recent years, especially through the scientific study of physical geography, the processes that go to the formation of climate, soil, and general configuration of land masses have been accurately determined, and the methods of teaching so simplified that it is possible to lead out from the central idea mentioned to the physical explanations of the elements of geographical difference quite early in the course of study. Setting out from the idea of the use made of the earth by civilization, the pupil in the fifth and sixth years of his schooling (at the age of eleven or twelve) may extend his inquiries quite profitably as far as the physical explanations of land-shapes and climates. In the seventh and eighth year of school much more may be done in this direction. But it is believed that the distinctively human interest connected with geography in the first years of its study should not yield to the purely scientific one of physical processes until the pupil has taken up the study of history.

The educational value of geography, as it is and has been in elementary schools, is obviously very great. It makes possible something like accuracy in the picturing of distant places and events and removes a large tract of mere superstition from the mind. In the days of newspaper reading one's stock of geographical information is in constant requisition. A war on the opposite side of the globe is followed with more interest in this year than a war near our own borders before the era of the telegraph. The general knowledge of the locations and boundaries of nations, of their status in civilization and their natural advantages for contributing to the world market, is of great use to the citizen in forming correct ideas from his daily reading.

The educational value of geography is even more apparent if we admit the claims of those who argue that the present epoch is the beginning of an era in which public opinion is organized into a ruling force by the agency of periodicals and books. Certainly neither the newspaper nor the book can influence an illiterate people; they can do little to form opinions where the readers have no knowledge of geography.[20]

As to the psychological value of geography little need be said. It exercises in manifold ways the memory of forms and the imagination; it brings into exercise the thinking power in tracing back toward unity the various series of causes. What educative value there is in geology, meteorology, zoölogy, ethnology, economics, history, and politics is to be found in the more profound study of geography, and, to a proportionate extent, in the study of its merest elements.

Your Committee is of the opinion that there has been a vast improvement in the methods of instruction in this branch in recent years, due in large measure to the geographical societies of this and other countries. At first there prevailed what might be named sailor geography. The pupil was compelled to memorize all the capes and headlands, bays and harbors, mouths of rivers, islands, sounds, and straits around the

[20] The doctrine of this section upon the educative value of geography and its relation to human life will be accepted by most teachers. The elementary school must study the earth *as the home of man.* This gives emphasis to the industrial and commercial features of the study. The teachings of the report are in substantial accord with those of the Herbartians. We study physical geography that we may know better our fellow men and our relations to them. The relation of this branch to history on the one side and to science on the other is a notable example of that idea of correlation which would teach each subject in the light of the knowledge of all others to which it is naturally related. The social order combines geography, history, natural science, the industries, and the characteristics of the people into a very close unity. The Herbartians and all good teachers demand that this unity shall be recognized in the school. The demands that some are making to have the emphasis placed upon the nature element rather than upon the human element are not sanctioned by this report. Geography is in part a natural-science study and in part a sociological study. Sociology and nature are so intimately related in it that much of the latter must be known in order to understand the former. The time has certainly come for expunging much of the "sailor geography" from our course of instruction.

world. He enlivened this to some extent by brief mention of the curiosities and oddities in the way of cataracts, water-gaps, caves, strange animals, public buildings, picturesque costumes, national exaggerations, and such matters as would furnish good themes for sailors' yarns. Little or nothing was taught to give unity to the isolated details furnished in endless number. It was an improvement on this when the method of memorizing capital cities and political boundaries succeeded. With this came the era of map drawing. The study of watersheds and commercial routes, of industrial productions and centers of manufacture and commerce, has been adopted in the better class of schools. Instruction in geography is growing better by the constant introduction of new devices to make plain and intelligible the determining influence of physical causes in producing the elements of difference and the counter-process of industry and commerce by which each difference is rendered of use to the whole world and each locality made a participator in the productions of all.[21]

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[21] The program of studies on a following page, recommends that a text-book in geography be used after the middle of the third year. The wisdom of this suggestion will depend upon the kind of text-book used. The doctrine of the author of this report is that children shall begin the use of text-books early in the study of all subjects, in order that they may acquire ability to interpret the printed page as soon as possible. It is true that a good teacher can lead the pupils to make a profitable use of the book early in their school course. The dead formalism that is blighting the schools throughout the country results from the use of text-books by poor teachers. If these teachers (?) were deprived of the book they would be compelled to invent some other method of teaching than that of giving a certain portion of the text to be learned by rote each day. Any change from this lifeless, memoriter grind would be for the better. Assuming that the teacher knows how to use a book it is not important to set any limit to the time of introducing it. This question is one of method, and the condition must always determine the method.

One is tempted to call attention again to a seeming inconsistency in this report which puts a text-book in geography into the hands of the pupil when he is not able (according to the teachings of it on language studies), to read any other than a colloquial vocabulary. Every text-book uses words that are technical and many others that do not belong to the child's every day conversation. But during the first three years of school life new words are not to be introduced for the reason that the child cannot learn form and content at the same time. See page 11.

D. History.

The next study, ranked in order of value, for the elementary school is History. But, as will be seen, the value of history, both practically and psychologically, is less in the beginning and greater at the end than geography. For it relates to the institutions of men, and especially to the political state and its evolution. While biography narrates the career of the individual, civil history records the careers of nations. The nation has been compared to the individual by persons interested in the educational value of history. Man has two selves, they say, the individual self, and the collective self of the organized state or union. The study of history is, then, the study of this larger, corporate, social, and civil self. The importance of this idea is thus brought out more clearly in its educational significance. For to learn this civil self is to learn the substantial condition which makes possible the existence of civilized man in all his other social combinations—the family, the Church, and the manifold associated activities of civil society. For the state protects these combinations from destruction by violence. It defines the limits of individual and associated effort, within which each endeavor re-enforces the endeavors of all, and it uses the strength of the whole nation to prevent such actions as pass beyond these safe limits and tend to collision with the normal action of the other individuals and social units. Hobbes called the state a Leviathan, to emphasize its stupendous individuality and organized self-activity. Without this, he said, man lives in a state of "constant war, fear, poverty, filth, ignorance, and wretchedness; within the state dwell peace, security, riches, science, and happiness." The state is the collective man who "makes possible the rational development of the individual man, like a mortal God, subduing his caprice and passion and compelling obedience to law, developing the ideas of justice, virtue, and religion, creating property and ownership, nurture and education." The education of the child into a knowledge of this higher self begins early within the nurture of the family. The child sees a policeman or some town officer, some public building, a court house or a jail; he sees or hears of an act of violence, a case of robbery or murder followed by arrest of the guilty. The omnipresent higher self, which has been invisible hitherto, now becomes visible to him in its symbols and still more in its acts.

History in school, it is contended, should be the special branch for education in the duties of citizenship. There is ground for this claim. History gives a sense of belonging to a higher social unity which possesses the right of absolute control over person and property in the interest of the safety of the whole. This, of course, is the basis of citizenship ; the individual must feel this or see this solidarity of the state and recognize its supreme authority. But history shows the collisions of nations, and the victory of one political ideal accompanied by the defeat of another. History reveals an evolution of forms of government that are better and better adapted to permit individual freedom, and the participation of all citizens in the administration of the government itself.

People who make their own government have a special interest in the spectacle of political evolution as exhibited in history. But it must be admitted that this evolution has not been well presented by popular historians. Take, for instance, the familiar example of old-time pedagogy, wherein the Roman republic was conceived as a freer government than the Roman empire that followed it, by persons apparently misled by the ideas of representative self-government associated with the word *republic*. It was the beginning of a new epoch when this illusion was dispelled, and the college student became aware of the true Roman meaning of *republic*, namely, the supremacy of an oligarchy on the Tiber that ruled distant provinces in Spain, Gaul, Asia Minor, Germany, and Africa, for its selfish ends and with an ever-increasing arrogance. The people at home in Rome, not having a share in the campaigns on the borderland, did not appreciate the qualities of the great leaders who, like Cæsar, subdued the nations by forbearance, magnanimity, trust, and the recognition of a sphere of freedom secured to the conquered by the Roman civil laws, which were rigidly enforced by the conqueror, as much as by the violence of arms. The change from republic to empire meant the final subordination of this tyrannical Roman oligarchy, and the recognition of the rights of the provinces to Roman freedom. This illustration shows how easily a poor teaching of history may pervert its good influence or purpose into a bad one. For the Roman monarchy under the empire secured a degree of freedom never before attained under the republic, in spite of the election of such tyrants as Nero and Caligula to the imperial purple. The civil service went on as usual administering the affairs of distant countries, educating them in Roman jurisprudence, and cultivating a love for accumulating private property. Those countries had before lived communistically after the style of the tribe or at best of the village community. Roman private property in land gave an impulse to the development of free individuality such as had always been impossible under the social stage of development known as the village community.

To teach history properly is to dispel this shallow illusion which flatters individualism, and to open the eyes of the pupil to the true nature of freedom, namely the freedom through obedience to just laws enforced by a strong government.[22]

Your Committee has made this apparent digression for the sake of a more explicit statement of its conviction of the importance of teaching history in a different spirit from that of abstract freedom, which sometimes means anarchy, although they admit the possibility of an opposite extreme, the danger of too little stress on the progressive element in the growth of nations and its manifestation in new and better political devices for representing all citizens without weakening the central power.

That the history of one's own nation is to be taught in the elementary school seems fixed by common consent. United States history includes first a sketch of the epoch of discoveries and next of the epoch of colonization. This fortunately suits the pedagogic requirements. For the child loves to approach the stern realities of a firmly established civilization through its stages of growth by means of individual enterprise. Here is the use of biography as introduction to history. It treats of exceptional individuals whose lives bring them in one way or another into national or even world-historical relations. They throw light on the nature and necessity of governments, and are in turn illuminated by the light thrown back on them by the institutions which they promote or hinder. The era of semi-private adventure with which American history begins is admirably adapted for study by the pupil in the elementary stage of his education. So too the next epoch, that of colonization. The pioneer is a degree nearer to civilization than is the explorer and discoverer. In the colonial history the pupil interests himself in the enterprise of aspiring individualities, in their conquest over obstacles of climate and soil; their conflicts with the aboriginal population; their choice of land for settlement; the growth of their cities; above all, their several attempts and final success in forming a constitution securing local self-government. An epoch of growing interrelation of the colonies succeeds, a tendency to union on a large scale due to the effect of European wars which involved England, France, and other countries, and affected the relations of their colonies in America. This epoch too abounds in heroic personalities, like Wolfe, Montcalm, and Washington, and perilous adventures, especially in the Indian warfare.[23]

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[22] The reader will take note that the studies in the order of their educational values are Language studies, Arithmetic, Geography, and History. Language and Literature introduce to human science and art, Arithmetic to the science of nature, and Geography occupies both fields. We now approach History which is an account of the greatest of human institutions, the state. This able analysis of the idea of the state is valuable to the student for other reasons than that it suggests the true spirit in which history should be taught.

The fourth epoch is the Revolution, by which the Colonies through joint effort secured their independence and afterward their union in a nation. The subject grows rapidly more complex and tasks severely the powers of the pupils in the eighth year of the elementary school. The formation of the Constitution, and a brief study of the salient features of the Constitution itself, conclude the study of the portion of the history of the United States that is sufficiently remote to be treated after the manner of an educational classic. Everything up to this point stands out in strong individual outlines and is admirably fitted for that elementary course of study. Beyond this point, the War of 1812 and the War of the Rebellion, together with the political events that led to it, are matters of memory with the present generation of parents and grandparents, and are consequently not so well fitted for intensive study in school as the already classic period of our history. But these later and latest epochs may be and will be read at home not only in the text-book on history used in the schools, but also in the numerous sketches that appear in newspapers, magazines, and in more pretentious shapes. In the intensive study which should be undertaken of the classic period of our history, the pupil may be taught the method appropriate to historical investigation, the many points of view from which each event ought to be considered. He should learn to discriminate between the theatrical show of events and the solid influences that move underneath as ethical causes. Although he is too immature for very far-reaching reflections, he must be helped to see the causal processes of history. Armed with this discipline in historic methods, the pupil will do all of his miscellaneous reading and thinking in this province with more adequate intellectual reaction than was possible before the intensive study carried on in school.[24]

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[23] The emphasis placed upon pioneer history and the stories of the adventures of the heroes who discovered and explored America, as an introduction to the study of the history of the growth of the American commonwealth, is in harmony with the teaching of history in the best schools at the present time. The new movement in education, including all the schools of reformers, is in full accord with the doctrine here set forth. The Herbartians carry the thought a step further and urge that when any particular section of the union, as, for instance, the Mississippi valley, or New England, or the gulf region, has an especially rich and interesting pioneer history, the schools should begin with the stories of the heroes of their respective sections and proceed from that as a starting point to the history of other sections.

The study of the outlines of the Constitution, for ten or fifteen weeks in the final year of the elementary school, has been found of great educational value. Properly taught, it fixes the idea of the essential threefoldness of the constitution of a free government and the necessary independence of each constituent power, whether legislative, judicial, or executive.

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[24] This distinction made between the "classic" period in our history and that which has not yet become classic, will be regarded by many as a little overdrawn. But the thórough mastery of this "classic" period as a cultivation of the historic sense through which our more modern history will be better comprehended, is sound pedagogy.

This report on the value of history is one of great ability and suggestiveness. It touches the field of method very lightly, and for that reason, perhaps, will be generally accepted without protest. Method has not yet become sufficiently "classic" to admit of such treatment as will bring all to one conclusion. It is when this report leaves the discussion of educational values and enters the realm of method for the realizing of the values in the education of the child that we begin to hear protests against its teachings.

This and some idea of the manner and mode of filling the official places in these three departments, and of the character of the duties with which each department is charged, lay foundations for an intelligent citizenship.

Besides this intensive study of the history of the United States in the seventh and eighth years, your committee would recommend oral lessons on the salient points of general history, taking a full hour of sixty minutes weekly—and preferably all at one time—for the sake of the more systematic treatment of the subject of the lesson and the deeper impression made on the mind of the pupil.

E. Other branches.

Your committee has reviewed the staple branches of the elementary course of study in the light of their educational scope and significance. Grammar, literature, arithmetic, geography, and history are the five branches upon which the disciplinary work of the elementary school is concentrated. Inasmuch as reading is the first of the scholastic arts, it is interesting to note that the whole elementary course may be described as an extension of the process of learning the art of reading. First comes the mastering of the colloquial vocabulary in printed and script forms. Next come five incursions into the special vocabularies required (*a*) in literature to express the fine shades of emotion and the more subtle distinctions of thought, (*b*) the technique of arithmetic, (*c*) of geography, (*d*) of grammar, (*e*) of history.

In the serious work of mastering these several technical vocabularies the pupil is assigned daily tasks that he must prepare by independent study. The class exercise or recitation is taken up with examining and criticising the pupil's oral statements of what he has learned, especial care being taken to secure the pupil's explanation of it in his own words. This requires paraphrases and definitions of the new words and phrases used in technical and literary senses, with a view to insure the addition to the mind of the new ideas corresponding to the new words. The misunderstandings are corrected and the pupil set on the way to use more critical alertness in the preparation of his succeeding lessons. The pupil learns as much by the recitations of his fellow-pupils as he learns from the teacher, but not the same things. He sees in the imperfect statements of his classmates that they apprehended the lesson with different presuppositions and consequently have seen some phases of the subject that escaped his observation, while they in turn have missed points which he had noticed quite readily. These different points of view become more or less his own, and he may be said to grow by adding to his own mind the minds of others.

It is clear that there are other branches of instruction that may lay claim to a place in the course of study of the elementary school; for example, the various branches of natural science, vocal music, manual training, physical culture, drawing, etc.

Here the question of another method of instruction is suggested. There are lessons that require previous preparation by the pupil himself—there are also lessons that may be taken up without such preparation and conducted by the teacher, who leads the exercise and furnishes a large part of the information to be learned, enlisting the aid of members of the class for the purpose of bringing home the new material to their actual experience. Besides these there are mechanical exercises for purposes of training, such as drawing, penmanship, and calisthenics.

In the first place there is industrial and æsthetic drawing, which should have a place in all elementary school work. By it is secured the training of the hand and eye. Then, too, drawing helps in all the other branches that require illustration. Moreover, if used in the study of the great works of art in the way hereinbefore mentioned, it helps to cultivate the taste and prepares the future workman for a more useful and lucrative career, inasmuch as superior taste commands higher wages in the finishing of all goods.[25]

[25] This report distinguishes between the five disciplinary studies and the other branches that are valuable for the practical information they give. The ground for this distinction may lie in the fact that the five studies (grammar, literature, arithmetic, geography, and history) represent what the author has elsewhere called the five great departments of human knowledge. That is, they represent the five distinct fields of activity in the world, viz: thought, art, inorganic nature, organic nature, and society. The thorough mastery of these branches

Natural science claims a place in the elementary school not so much as a disciplinary study side by side with grammar, arithmetic, and history, as a training in habits of observation and in the use of the technique by which such sciences are expounded. With a knowledge of the technical terms and some training in the methods of original investigation employed in the sciences, the pupil broadens his views of the world and greatly increases his capacity to acquire new knowledge. For the pupil who is unacquainted with the technique of science has to pass without mental profit the numerous scientific allusions and items of information which more and more abound in all our literature, whether of an ephemeral or a permanent character. In an age whose proudest boast is the progress of science in all domains, there should be in the elementary school, from the first, a course in the elements of the sciences. And this is quite possible; for each science possesses some phases that lie very near to the child's life.

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organizes the individual mind in harmony with human civilization. In the language of the Herbartians the "concept-mass," or the self, becomes attuned to the movement of the external world of nature and society. This is what we common people mean by the "formation of character." Discipline is the name of the process by which the mind becomes thus organized and tendencies and habits of action established. The ground upon which the five studies named are distinguished as *disciplinary* above others seems to be that a larger share of the energies of the pupil are devoted to learning them. In other words, "as the twig is bent the tree's inclined." But it must be true that every knowledge activity that enters into the organization of the self in education must perform its part in building character and thus be disciplinary. That idea which seemed once to prevail, that discipline was for *forming* the child's mind, and that it was to be *filled* subsequently with a content that should be of practical use in life does not now prevail. It would be a misfortune if any one should interpret this report to mean other than that all of the educative efforts of the school are disciplinary and help in the formation of character. Of course, there is great difference between the disciplinary value of that study in which the pupil solves his own difficulties and that teaching in which the teacher accompanies the pupil, supplying the needed information or suggestion at every step of his progress. The latter is not worth much for character building, for the reason that it is not apt to become a part of the organized self. There is much of knowledge or information, so-called, that is simply the present possession of the carrying memory and never becomes assimilated with the self. It may be of temporary use but is not of permanent value. The school cannot afford to expend much energy in acquiring such knowledge.

These familiar topics furnish the doors through which the child enters the various special departments. Science, it is claimed, is nothing if not systematic. Indeed, science itself may be defined as the interpretation of each fact through all other facts of a kindred nature. Admitting that this is so, it is no less true that pedagogic method begins with the fragmentary knowledge possessed by the pupil and proceeds to organize it and build it out systematically in all directions. Hence any science may be taken up best on the side nearest the experience of the pupil and the investigation continued until the other parts are reached. Thus the pedagogical order is not always the logical or scientific order. In this respect it agrees with the order of discovery, which is usually something quite different from the logical order, for that is the last thing discovered. The natural sciences have two general divisions: one relating to inorganic matter, as physics and chemistry, and one relating to organic, as botany and zoölogy. There should be a spiral course in natural science, commencing each branch with the most interesting phases to the child. A first course should be given in botany, zoölogy, and physics, so as to treat of the structure and uses of familiar plants and animals, and the explanation of physical phenomena as seen in the child's playthings, domestic machines, etc. A second course covering the same subjects, but laying more stress on classification and functions, will build on to the knowledge already acquired from the former lessons and from his recently acquired experience. A third course of weekly lessons, conducted by the teacher as before in a conversational style, with experiments and with a comparison of the facts of observation already in the possession of the children, will go far to helping them to an acquisition of the results of natural science. Those of the children specially gifted for observation in some one or more departments of nature will be stimulated and encouraged to make the most of their gifts.

In the opinion of your Committee there should be set apart a full hour each week for drawing and the same amount for oral lessons in natural science.

The oral lessons in history have already been mentioned. The spiral course, found useful in natural science because of the rapid change in capacity of comprehension by the pupil from his sixth to his fourteenth year, will also be best for the history course, which will begin with biographical adventures of interest to the child, and possessing an important historical bearing. These will proceed from the native land first to England, the parent country, and then to the classic civilizations (Greece and Rome being, so to speak, the grandparent countries of the American colonies). These successive courses of oral lessons adapted respectively to the child's capacity will do much to make the child well informed on this topic. Oral lessons should never be mere lectures, but more like Socratic dialogues, building up a systematic knowledge partly from what is already known, partly by new investigations, and partly by comparison of authorities.

The best argument in favor of oral weekly lessons in natural science and general history is the actual experiences of teachers who have for some time used the plan. It has been found that the lessons in botany, zoölogy, and physics give the pupil much aid in learning his geography and other lessons relating to nature, while the history lessons assist very much his comprehension of literature, and add interest to geography.[26]

[26] But most educationists will object to including natural science, vocal music, manual training, physical culture, and drawing in the ephemeral knowledge described in the preceding paragraph. The educational value of these is stated, or clearly implied, in the text of the report. But there will be not a little dissent from the method suggested for realizing these values in the school. One exercise per week of sixty minutes duration does not seem to be the best arrangement, even though some have found it to be valuable. (See program.) It is better than nothing, without doubt. But that any discipline, or character, either physical or mental, shall result from these studies, there is need of a more frequent return to them than one oral lesson per week implies. Perhaps sixty minutes per week may be all the school time that the program will permit, but it will be better that this hour shall be broken up into twenty-minute recitations three times per week. Nor will sixty minutes include all of the time during the week which the pupils should devote to such a study as natural science. A teacher that can use, profitably, one hour for a single recitation in a week can use three periods of twenty minutes each to a much better advantage, in an *elementary* school.

It is through frequent return to a subject, and intense activity upon it for short periods, that it "soaks in" and becomes influential in the building of character. Especially is this true if the principles of apperception and concentration are not forgotten by the teacher in working upon the "disciplinary" subjects.

It is understood by your Committee that the lessons in physiology and hygiene (with special reference to the effects of stimulants and narcotics) required by State laws should be included in this oral course in natural science. Manual training, so far as the theory and use of the tools for working in wood and iron are concerned, has just claims on the elementary school for a reason similar to that which admits natural science. From science have proceeded useful inventions for the aid of all manner of manufactures and transportation. The child of today lives in a world where machinery is constantly at his hand. A course of training in wood and iron work, together with experimental knowledge of physics or natural philosophy, makes it easy for him to learn the management of such machines. Sewing and cookery have not the same but stronger claims for a place in school. One-half day in each week for one-half a year each in the seventh and eighth grades will suffice for manual training, the sewing and cookery being studied by the girls, and the wood and iron-work by the boys. It should be mentioned, however, that the advocates of manual training in iron and wood-work recommend these branches for secondary schools, because of the greater maturity of body, and the less likelihood to acquire wrong habits of manipulation, in the third period of four years of school.

Vocal music has long since obtained a well-established place in all elementary schools. The labors of two generations of special teachers have reduced the steps of instruction to such simplicity that whole classes may make as regular progress in reading music as in reading literature.

In regard to physical culture your Committee is agreed that there should be some form of special daily exercises amounting in the aggregate to one hour each week, the same to include the main features of calisthenics, and German, Swedish, or American systems of physical training, but not to be regarded as a substitute for the old-fashioned recess established to permit the free exercise of the pupils in the open air. Systematic physical training has for its object rather the will training than recreation, and this must not be forgotten. To go from a hard lesson to a series of calisthenic exercises is to go from one kind of will training to another. Exhaustion of the will should be followed by the caprice and wild freedom of the recess. But systematic physical exercise has its sufficient reason in its aid to a graceful use of the limbs, its development of muscles that are left unused or rudimentary unless called forth by special training, and for the help it gives to the teacher in the way of school discipline.

Your Committee would mention in this connection instruction in morals and manners, which ought to be given in a brief series of lessons each year with a view to build up in the mind a theory of the conventionalities of polite and pure-minded society. If these lessons are made too long or too numerous, they are apt to become offensive to the child's mind. It is of course understood by your Committee that the substantial moral training of the school is performed by the discipline rather than by the instruction in ethical theory. The child is trained to be regular and punctual, and to restrain his desire to talk and whisper—in these things gaining self-control day by day. The essence of moral behavior is self-control. The school teaches good behavior. The intercourse of a pupil with his fellows without evil words or violent actions is insisted on and secured. The higher moral qualities of truth-telling and sincerity are taught in every class exercise that lays stress on accuracy of statement.

Your Committee has already discussed the importance of teaching something of algebraic processes in the seventh and eighth grades with the view to obtaining better methods of solving problems in advanced arithmetic; a majority of your Committee are of the opinion that formal English grammar should be discontinued in the eighth year, and the study of some foreign language, preferably that of Latin, substituted. The educational effect on an English-speaking pupil of taking up a language which, like Latin, uses inflections instead of prepositions, and which further differs from English by the order in which its words are arranged in the sentence, is quite marked, and a year of Latin places a pupil by a wide interval out of the range of the pupil who has continued English grammar without taking up Latin. But the effect of the year's study of Latin increases the youth's power of apperception in very many directions by reason of the fact that so much of the English vocabulary used in technical vocabularies, like those of geography, grammar, history, and literature, is from a Latin source, and besides there are so many traces in the form and substance of human learning of the hundreds of years when Latin was the only tongue in which observation and reflection could be expressed.[27]

Your Committee refers to the program given later in this report for the details of co-ordinating these several branches already recommended.

The difference between elementary and secondary studies.

In recommending the introduction of algebraic processes in the seventh and eighth years—as well as in the recommendation just now made to introduce Latin in the eighth year of the elementary course—your Committee has come face to face with the question of the intrinsic difference between elementary and secondary studies.

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[27] Perhaps the most startling innovation in this report is that which substitutes Latin for English Grammar in the eighth grade. Dr. Harris has frequently affirmed that if one hundred young men of equal ability were to start a new colony, fifty of whom had spent six months in the study of Latin, while the others had studied some other subject instead, the fifty who had studied Latin would soon occupy all the legislative, judicial, and executive departments of the government. This seems to most persons to be a very extraordinary statement. Language forms partake in a measure of the genius of the people who invent them, it is true, but will they innoculate another and alien people with that genius simply by a six months' study of them? Ideas, knowledge, feeling, are practically the same in all men. Is it not an undue appreciation of the influence of form, which gives to one nation the individual characteristics of another "merely through a six month's study of the other's language?"

There is a less occult reason for learning the Latin in the fact that the English is so largely composed of Latin words. By learning the concrete meanings of these words in the Latin tongue, the English words cease to be mere abstract dead symbols, and become filled with their original concrete meaning. This is a sufficient reason for one who would know the English to study the Latin, and if he is to make an extended study of science he ought to have some knowledge of the Greek for a similar reason.

The recommendation of the committee that Latin be substituted for English Grammar in the eighth grade will not be generally accepted in that form. It is probable that the influence of this report will start a line of reflection in the minds of the educational public which will result in giving more prominence to the study of the history and derivation of words and the mastery of Latin roots in the grammar grades. We cannot think that the peculiar *form* of the Latin sentence will do more for the pupil than the form of the German sentence would do, and the influence of either is not great. Would it not be better to advance natural science to a "disciplinary" study than to introduce Latin into the elementary school as such a study?

Custom has placed algebra, geometry, the history of English literature, and Latin in the rank of secondary studies; also general history, physical geography, and the elements of physics and chemistry. In a secondary course of four years, trigonometry may be added to the mathematics; some of the sciences whose elements are used in physical geography may be taken up separately in special treatises, as geology, botany, and physiology. There may be also a study of whole works of English authors, as Shakspere, Milton, and Scott. Greek is also begun in the second or third year of the secondary course. This is the custom in most public high schools. But in private secondary schools Latin is begun earlier, and so, too, Greek, algebra, and geometry. Sometimes geometry is taken up before algebra, as is the custom in German schools. These arrangements are based partly on tradition, partly on the requirements of higher institutions for admission, and partly on the ground that the intrinsic difficulties in these studies have fixed their places in the course of study. Of those who claim that there is an intrinsic reason for the selection and order of these studies, some base their conclusions on experience in conducting pupil's through them, others on psychological grounds. The latter contend, for example, that algebra deals with general forms of calculation, while arithmetic deals with the particular instances of calculation. Whatever deals with the particular instance is relatively elementary, whatever deals with the general form is relatively secondary. In the expression $a+b=c$ algebra indicates the form of all addition. This arithmetic cannot do, except in the form of a verbal rule describing the steps of the operation; its examples are all special instances falling under the general form given in algebra. If, therefore, arithmetic is an elementary branch, algebra is relatively to it a secondary branch. So, too, geometry, though not directly based on arithmetic, has to presuppose an acquaintance with it when it reduces spatial functions into numerical forms, as, for example, in the measurement of surfaces and solids, and in ascertaining the ratio of the circumference to the radius, and of the hypotenuse to the two other sides of the right-angled triangle. Geometry, moreover, deals with necessary relations; its demonstrations reach universal and necessary conclusions, holding good not merely in such material shapes as we have met with in actual experience, but with all examples possible, past, present, or future. Such knowledge transcending experience is intrinsically secondary as compared with the first acquaintance with geometric shapes in concrete examples.

In the case of geometry it is claimed by some that what is called "inventional geometry" may be properly introduced into the elementary grades. By this some mean the practice with blocks in the shape of geometric solids and the construction of different figures from the same; others mean the rediscovery by the pupil for himself of the necessary relations demonstrated by Euclid. The former—exercises of construction with blocks—are well enough in the kindergarten, where they assist in learning number, as well as in the analysis of material forms. But its educational value is small for pupils advanced into the use of books. The original discovery of Euclid's demonstrations, on the other hand, belongs more properly to higher education than to elementary. In the geometrical textbooks recently introduced into secondary schools, there is so much of original demonstration required that the teacher is greatly embarrassed on account of the differences in native capacity for mathematics that develop among the pupils of the same class in solving the problems of invention. A few gifted pupils delight in the inventions, and develop rapidly in power, while the majority of the class use too much time over them, and thus rob the other branches of the course of study, or else fall into the bad paractice of getting help from others in the preparation of their lessons. A few in every class fall hopelessly behind and are discouraged. The result is an attempt on the part of the teacher to correct the evil by requiring a more thorough training in the mathematical studies preceding, and the consequent delay of secondary pupils in the lower grades of the course in order to bring up their "inventional geometry." Many, discouraged, fail to go on; many more fail to reach higher studies because unable to get over the barrier unnecessarily placed before them by teachers who desire that no pupils except natural geometricians shall enter into higher studies.[28]

Physical geography in its scientific form is very properly made a part of the secondary course of study. The pupil in his ninth year of work can profitably acquire the scientific technique of geology, botany, zoölogy, meteorology, and ethnology, and in the following years take up those sciences separately and push them further, using the method of actual investigation. The subject-matter of physical geography is of very high interest to the pupil who has studied geography in the elementary grades after an approved method. It takes up the proximate grounds and causes for the elements of difference on the earth's surface, already become familiar to him through his elementary studies, and pushes them back into deeper, simpler, and more satisfactory principles. This study performs the work also of correlating the sciences that relate to organic nature by showing their respective uses to man. From the glimpses which the pupil gets of mineralogy, geology, botany zoölogy, ethnology, and meteorology in their necessary connection as geographic conditions he sees the scope and grand significance of those separate inquiries. A thirst is aroused in him to pursue his researches into their domains. He sees, too, the borderlands in which new discoveries may be made by the enterprising explorer.

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[28] This paragraph involves a sharp criticism of the idea prevalent in high schools that pupils must reach a "passing" standard in all subjects before being allowed to pass on or pass out. A pupil that has no capacity for mathematics, for example, must procure one before he is permitted to graduate, although he may excel in other studies. This is another instance of the dominance of formalism in our education, and of a wrong conception of what is meant by harmonious development. Why not refuse a man the honors of society in real life merely because he is not a good accountant?

It is moreover, a stern rebuke to that educational malpractice which does not distinguish between the elementary and the secondary phases of knowledge. The elementary phase includes what may be termed the sense-relations of things (the kindergarten stage,) and those simpler and more concrete thought-relations that belong to and make up the experiences of common life. This is the so-called "practical knowledge," so much in favor with the general public. The elementary text-books are supposed to occupy this field. This is the period for accumulating a mass of "apperceiving ideas," both of things and their relations which make secondary knowledge possible. Secondary knowledge is knowledge of the relations of relations. All knowledge is knowledge of relations. Whether it be elementary or secondary depends upon how far the relations considered are removed from the objective reality known as the world of nature and humanity.

Physics, including what was called until recently "natural philosophy," after Newton's *Principia* (*Philosophiæ naturalis principia mathematica*), implies more knowledge of mathematics for its thorough discussion than the secondary pupil is likely to possess. In fact, the study of this branch in college thirty years ago was crippled by the same cause. It should follow the completion of analytical geometry. Notwithstanding this, a very profitable study of this subject may be made in the second year of the high school or preparatory school, although the formulas can then be understood in so far as they imply elementary algebra only. The pupil does not get the most exact notions of the quantitative laws that rule matter in its states of motion and equilibrium, but he does see the action of forces as qualitative elements of phenomena, and understand quite well the mechanical inventions by which men subdue them for his use and safety. Even in the elementary grades the pupil can seize very many of these qualitative aspects and learn the explanation of the mechanical phenomena of nature, and other applications of the same principles in invention, as for example, gravitation in falling bodies: its measurement by the scales; the part it plays in the pump, the barometer, the pendulum; cohesion in mud, clay, glue, paste, mortar, cement, etc.; capillary attraction in lamp-wicks, sponges, sugar, the sap in plants; the applications of lifting by the lever, pulley, inclined plane, wedge, and screw; heat in the sun, combustion, friction, steam, thermometer, conduction, clothing, cooking, etc; the phenomena of light, electricity, magnetism, and the explanation of such mechanical devices as spectacles, telescopes, microscopes, prisms, photographic cameras, electric tension in bodies, lightning, mariner's compass, horseshoe magnet, the telegraph, the dynamo. This partially qualitative study of forces and mechanical inventions has the educational effect of enlightening the pupil, and emancipating him from the network of superstition that surrounds him in the child world, partly of necessity and partly by reason of the illiterate adults that he sometimes meets with in the persons of nurses, servants, and tradespeople, whose occupations have more attraction for him than those of cultured people. The fairy world is a world of magic, of immediate interventions of supernatural spirtual beings, and while this is proper enough for the child up to the time of the school, and in a lessening degree for some time after, it is only negative and harmful in adult manhood and womanhood. It produces arrested development of powers of observation and reflection in reference to phenomena, and stops the growth of the soul at the infantine stage of devolpment. Neither is this infantine stage of wonder and magic more religious than the stage of disillusion through the study of mathematics and physics. It is the arrest of religious development also, at the stage of fetichism. The highest religion, that of pure Christianity, sees in the world infinite mediations, all for the purpose of developing independent individuality; the perfection of human souls not only in one kind of piety, namely that of the heart, but in the piety of the intellect that beholds truth, the piety of the will that does good deeds wisely, the piety of the senses that sees the beautiful and realizes it in works of art. This is the Christian idea of divine Providence as contrasted with the heathen idea of that Providence, and the study of natural philosophy is an essential educational requisite in its attainment, although a negative means. Of course there is danger of replacing the spiritual idea of the divine by the dynamical or mechanical idea and thus arresting the mind at the stage of pantheism instead of fetichism. But this danger can be avoided by further education through secondary into higher education, whose entire spirit and method are comparative and philosophical in the best sense of the term. For higher education seems to have as its province the correlation of the several branches of human learning in the unity of the spiritual view furnished by religion to our civilization. By it one learns to see each branch, each science or art or discipline, in the light of all the others.

This higher or comparative view is essential to any completeness of education, for it alone prevents the one-sidedness of hobbies, or "fads" as they are called in the slang of the day. It prevents also the bad effects that flow from the influence of what are termed "self-educated men," who for the most part carry up with them elementary methods of study, or at best, secondary methods, which accentuate the facts and relations of natural and spiritual phenomena, but do not deal with their higher correlations. The comparative method cannot, in fact, be well introduced until the student is somewhat advanced, and has already completed his elementary course of study dealing with the immediate aspects of the world, and his secondary course dealing with the separate formal and dynamical aspects that lie next in order behind the facts of first observation. Higher education in a measure unifies these separate formal and dynamic aspects, corrects their one-sidedness, and prevents the danger of what is so often noted in the self-educated men who unduly exaggerate some one of the subordinate aspects of the world and make it a sort of first principle.[29]

Here your Committee finds in its way the question of the use of the full scientific method in the teaching of science in the elementary school. The true method has been called the method of investigation, but that method as used by the child is only a sad caricature of the method used by the mature scientific man, who has long since passed through the fragmentary observation and reflection that prevail in the period of childhood, as well as the tendencies to exaggeration of the importance of one or another branch of knowledge at the expense of the higher unity that correlates all; an exaggeration that manifests itself in the possession and use of a hobby. The ideal scientific man has freed himself from obstacles of this kind, whether psychological or objective. What astronomical observers call the subjective coefficient must be ascertained and eliminated from the record that shows beginnings, endings, and rates. There is a possibility of perfect specialization in a scientific observer only after the elementary and secondary attitudes of mind have been outgrown. An attempt to force the child into the full scientific method by specialization would cause an arrest of his development in the other branches of human learning outside of his specialty. He could not properly inventory the data of his own special sphere unless he knew how to recognize the defining limits or boundaries that separate his province from its neighbors. The early days of science abounded in examples of confusion of provinces in the inventories of their data. It is difficult, even now, to decide where physics and chemistry leave off, and biology begins.

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[29] Many students and admirers of this report will regret that it waits to introduce this idea of correlation until the pupil reaches the secondary school. It should be in the mind of the teacher in every grade, and every grade should be taught in the light of it. The secondary school may be the place where the child first comes to a full consciousness of it, but it should be in his sub-consciousness long before. This is the definition of correlation for which the so-called Herbartian movement is contending—the unification of all studies in the life of the individual, and the recognition of this unity in the world

Your Committee does not attempt to state the exact proportion in which the child, at his various degrees of advancement, may be able to dispense with the guiding influence of teacher and text-book in his investigations, but they protest strongly against the illusion under which certain zealous advocates of the early introduction of scientific method seem to labor. They ignore in their zeal the deduction that is to be made for the guiding hand of the teacher, who silently furnishes to the child the experience that he lacks, and quietly directs his special attention to this or to that phase, and prevents him from hasty or false generalization as well as from undue exaggeration of single facts or principles. Here the teacher adds the needed scientific outlook which the child lacks, but which the mature scientist possesses for himself.[30]

It is contended by some that the scientific frame of mind is adapted only to science, but not to art, literature, and religion, which have something essential that science does not reach; not because of the incompleteness of the sciences themselves, but because of the attitude of the mind assumed in the observation of nature. In analytic investigation there is isolation of parts from one another, with a view to find the sources of the influences which produce the phenomena shown in the object. The mind brings everything to the test of this idea. Every phenomenon that exists comes from beyond itself, and analysis will be able to trace the source.

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[30] The distinction involved in this discussion between the method of discovery and the method of instruction, in teaching elementary science, is an important one. The child cannot pursue the study of science by the method of discovery with profit until he has accumulated a body of apperceiving science ideas that will guide him in his attempts at original discovery. Before this time he must discover (?) under the leadership of teacher or text-book. In other words, he must learn elementary science by the method of instruction which is so applied as to teach him the way by which he shall pursue original discovery later. The organized knowledge of teacher or text-book must guide him in getting ready to pursue the method of investigation in acquiring new knowledge.

Now, this frame of mind, which insists on a foreign origin of all that goes to constitute an object, debars itself in advance from the province of religion, art, and literature as well as of philosophy. For self-determination, personal activity, is the first principle assumed by religion, and it is tacitly assumed by art and literature, Classic and Christian. The very definition of philosophy implies this, for it is the attempt to explain the world by the assumption of a first principle, and to show that all classes of objects imply that principle as ultimate presupposition. According to this view it is important not to attempt to hasten the use of a strictly scientific method on the part of the child. In his first years he is acquiring the results of civilization rather as an outfit of habits, usages, and traditions than as a scientific discovery. He cannot be expected to stand over against the culture of his time, and challenge one and all of its conventionalities to justify themselves before his reason. His reason is too weak. He is rather in the imitation stage of mind than in that of criticism. He will not reach the comparative or critical method until the era of higher education.

However this may be, it is clear that the educational value of science and its method is a very important question, and that on it depends the settlement of the question where specialization may begin. To commence the use of the real scientific method would imply a radical change also in methods from the beginning. This may be realized by considering the hold which even the kindergarten retains upon symbolism and upon art and literature. But in the opinion of a majority of your Committee natural science itself should be approached, in the earliest years of the elementary school, rather in the form of results with glimpses into the methods by which these results were reached. In the last two years (the seventh and eighth) there may be some strictness of scientific form and an exhibition of the method of discovery. The pupil, too, may to some extent put this method into practice himself. In the secondary school there should be some laboratory work. But the pupil cannot be expected to acquire for himself fully that the world and its history is a sort of antiphonic hymn in the scientific method of dealing with nature until the second part of higher education—its post-graduate work. Nevertheless this good should be kept in view from the first year of the elementary school, and there should be a gradual and continual approach to it.[31]

In the study of general history appears another branch of the secondary course. History of the native land is assumed to be an elementary study. History of the world is certainly a step further away from the experience of the child. It is held by some teachers to be in accordance with proper method to begin with the foreign relations of one's native land and to work outward to the world-history. The European relations involved in the discovery and colonization of America furnish the only explanation to a multitude of questions that the pupil has started in the elementary school. He should move outward from what he has already learned, by the study of a new concentric circle of grounds and reasons, according to this view. This, however, is not the usual course taken. On beginning secondary history the pupil is set back face to face with the period of tradition, just when historic traces first make their appearance. He is by this arrangement broken off from the part of history that he has become acquainted with and made to grapple with that period which has no relation to his previous investigations. It is to be said, however, that general history lays stress on the religious thread of connection, though less now than formerly. The world history is a conception of the great Christian thinker, St. Augustine, who held which God reads his counsels, and the earth and man read the responses. He induced Orosius, his pupil, to sketch a general history in the spirit of his view. It was natural that the Old Testament histories, and especially the chapters of Genesis, should furnish the most striking part of its contents. This general history was connected with religion and brought closer to the experience of the individual than the history of his own people. To commence history with the Garden of Eden, the Fall of Man, and the Noachian Deluge was to begin with what was most familiar to all minds, and most instructive, because it concerned most nearly the conduct of life. Thus religion furnished the apperceptive material by which the early portions of history were recognized, classified, and made a part of experience.

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[31] This is an interesting discussion of the influence of the study of science upon the young. That a serious study of science in the elementary and high schools debars the mind from the province of religion, art, and literature is a startling conclusion. Is it not Dr. Harris himself who stoutly affirms that one of the direct roads to the insight that the ultimate principle of the universe is a person lies through the study of science? If the study of nature by a logical necessity leads to the conclusion that conscious self-activity is the core and essence of all things, we may well be startled when we are told that the study of science at any age debars the mind from religion. Is it not the faulty teaching of science that does it? Is it not because development is arrested by too little reference to that higher unity to which science points, that the study of science as a discipline in elementary and secondary schools tends to debar the mind from the province of religion?

Now that studies in archæology, especially those in the Nile and Euphrates valleys, are changing the chronologies and the records of early times and adding new records of the past, bringing to light national movements and collisions of peoples, together with data by which to determine the status of their industrial civilization, their religious ideas, and the form of their literature and art, the concentric arrangement of all this material around the history of the chosen people as a nucleus is no longer possible. The question has arisen, therefore, whether general history should not be rearranged for the secondary school, and made to connect with American history for apperceptive material rather than with Old Testament history. To this it has been replied with force that the idea of a world history, as St. Augustine conceived it, is the noblest educative ideal ever connected with the subject of history. Future versions of general history will not desert this standpoint, we are told, even if they take as their basis that of ethnology and anthropology, for these, too, will exhibit a plan in human history—an educative principle that leads nations toward freedom and science, because the Creator of nature has made it, in its fundamental constitution, an evolution or progressive development of individuality. Thus the idea of divine Providence is retained, though made more comprehensive by bringing the whole content of natural laws within his will as his method of work.[32]

[32] The above is a new argument for the beginning of the study of history with the near rather than the remote. In this suggestion the

These considerations, we are reminded by the partisans of humanity studies, point back to the educative value of history as corrective of the one-sidedness of the method of science. Science seeks explanation in the mechanical conditions of, and impulses received from, the environment, while history keeps its gaze fixed on human purposes, and studies the genesis of national actions through the previous stages of feelings, convictions, and conscious ideas. In history the pupil has for his object self-activity, reaction against environment, instead of mechanism, or activity through another.

The history of English literature is another study of the secondary school. It is very properly placed beyond the elementary school, for as taught it consists largely of the biographies of men of letters. The pupils who have not yet learned any great work of literature should not be pestered with literary biography, for at that stage the greatness of the men of letters cannot be seen. Plutarch makes great biographies because he shows heroic struggles and great deeds. The heroism of artists and poets consists in sacrificing all for the sake of their creations. The majority of them come off sadly at the hands of the biographer, for the reason that the very sides of their lives are described which they had slighted and neglected for the sake of the Muses. The prophets of Israel did not live in city palaces, but in caves; they did not wear fine raiment, nor feed sumptuously, nor conform to the codes of polite society. They were no courtiers when they approached

report is in accord with the teachings of the Herbartian movement which would begin the study of history with the institutional life that is the child's environment, and proceed to the study of the pioneer life of that environment and from thence to the study of one's own country and so on to the history of ancient times.

It is interesting to note, also, that this movement tends to begin the study of literature with fairy stories and the legendary tales of *ancient* times. The fanciful and imaginary, was the stage of development of literature among the ancients. Hegel calls the Greek period the boyhood of the race. There is something, as has been said before, in this idea of culture epochs that can be made useful in education. How much, it remains yet to be seen. But the idea of this movement seems to be that through acquaintance with ancient myths in childhood the pupil becomes somewhat familiar with one phase of the life of the ancient peoples—the aesthetic and religious—and so is better prepared to understand their institutional life later, when he has attained the age of reason.

the king. They neglected all the other institutions—family, productive industry, and state—for the sake of one, the Church, and even that not the established ceremonial of the people, but a higher and more direct communing with Jehovah. So with artists and men of letters it is more or less the case that the institutional side of their lives is neglected, or unsymmetrical, or if this is not the case it will be found prosaic and uneventful, throwing no light on their matchless productions.

For these reasons should not the present use of literary biography as it exists in secondary schools, and is gradually making its way into elementary schools, be discouraged, and the time now given to it devoted to the study of literary works of art? It will be admitted that the exposure of the foibles of artists has an immoral tendency on youth: for example, one effects to be a poet, and justifies laxity and self-indulgence through the example of Byron. Those who support this view holdothat we should not dignify the immoral and defective side f life by making it a branch of study in school.[33]

Correlation by synthesis of studies.

Your Committee would mention another sense in which the expression correlation of studies is sometimes used. It is held by advocates of an artificial center of the course of study. They use, for example, De Foe's Robinson Crusoe for a reading exercise, and connect with it the lessons in geography and arithmetic. It has been pointed out by critics of this method that there is always danger of covering up the literary features of the reading matter under accessories of mathematics and natural science. If the material for other branches is to be sought for in connection with the literary exercise, it will distract the attention from the poetic unity. On the other hand, arithmetic and geography cannot be unfolded freely and comprehensively if they are to wait on the opportunities afforded in a poem or a novel for their development. A correlation of this kind, instead of being a deeper correlation such as is found in all parts of human learning by the studies of the college and university, is rather a shallow and uninteresting kind of correlation that reminds one of the system of mnemonics, or artificial memory, which neglects the association of facts and events with their causes and the history of their evolution, and looks for unessential quips, puns, or accidental suggestions with a view to strengthening the memory. The effect of this is to weaken the power of systematic thinking which deals with essential relations, and substitute for it a chaotic memory that ties together things through false and seeming relations, not of the things and events, but of the words that denote them.

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[33] This argument against the serious study of the biographies of authors in connection with the study of their works, is both unique and forcible. They are not to be studied because they are not worth knowing at that stage of the pupil's growth.

The correlation of geography and arithmetic and history in and through the unity of a work of fiction is at best an artificial correlation, which will stand in the way of the true objective correlations. It is a temporary scaffolding made for school purposes. Instruction should avoid such temporary structures as much as possible, and when used they should be only used for the day, and not for the year, because of the danger of building up an apperceptive center in the child's mind that will not harmonize with the true apperceptive center required by the civilization. The story of Robinson Crusoe has intense interest to the child as a lesson in sociology, showing him the helplessness of isolated man and the re-enforcement that comes to him through society. It shows the importance of the division of labor. All children should read this book in the later years of the elementary course, and a few profitable discussions may be had in school regarding its significence. But De Foe painted in it only the side of adventure that he found in his countrymen in his epoch, England after the defeat of the Armada having taken up a career of conquest on the seas, ending by colonization and a world commerce. The liking for adventure continues to this day among all Anglo-Saxon peoples, and beyond other nationalities there is in English-speaking populations a delight in building up civilization from the very foundation. This is only, however, one phase of the Anglo-Saxon mind. Consequently the history of Crusoe is not a proper center for a year's study in school. It omits cities, governments, the world commerce, the international process, the Church, the newspaper and book from view, and they are not even reflected in it.

Your Committee would call attention in this connection to the importance of the pedagogical principle of analysis and isolation as preceding synthesis and correlation. There should be rigid isolation of the elements of each branch for the purpose of getting a clear conception of what is individual and peculiar in a special province of learning. Otherwise one will not gain from each its special contribution to the whole. That there is some danger from the kind of correlation that essays to teach all branches in each will be apparent from this point of view.[34]

III. THE SCHOOL PROGRAM.

In order to find a place in the elementary school for the several branches recommended in this report, it will be necessary to use economically the time allotted for the school

[34] This section of the report has been thought to assail the principle of concentration which is emphasized so strongly by the Herbartians. It is reported that such an artificial center as Robinson Crusoe has been advocated by some German pedagogues who call themselves Herbartians, but was not advocated by Herbart himself. No such doctrine is taught by any Herbartian in this country who has ability enough to gain a hearing and a following. But there is one serious attempt in this country to teach all the common school branches, or a large number of them, with nature study as the core. The Herbartians choose language, literature, and history as the central studies. It is their doctrine that each branch is to be mastered as a distinct group of ideas, but their contention is that the differences between the studies is too often emphasized to the exclusion of their unity. In much of our school practice parts of a subject, as arithmetic, or geography, are so separated from other parts of the same study that the pupils fail to see them as parts of one whole. The school studies may be classified not only into groups of kindred studies as the mathematics, the natural sciences, and the like, but some of these groups have a closer kinship than have others; such as language, literature, and history for example. This kinship can be recognized in the interest of an organized unity of knowledge even in the lower grades. But the Herbartians should not be forced, even by the misrepresentation of the critics, to go to the other extreme from that which now prevails so generally, and teach either in theory or practice, that a thorough mastery of each study as a distinct body of knowledge and a distinct discipline is not to be insisted upon. The contention is that arithmetic can be better mastered *as arithmetic* in the elementary grades when it is seen in its concrete relations to life; that is, to the other subjects of study in the school.

term, which is about two hundred days, exclusive of vacations and holidays. Five days per week and five hours of actual school work or a little less per day, after excluding recesses for recreation, give about twenty-five hours per week. There should be, as far as possible, alternation of study-hours and recitations (the word recitation being used in the United States for class exercise or lesson conducted by the teacher and requiring the critical attention of the entire class.) Those studies requiring the clearest thought should be taken up, as a usual thing, in the morning session, say arithmetic the second half hour of the morning and grammar the half-hour next succeeding the morning recess for recreation in the open air. By some who are anxious to prevent study at home, or at least to control its amount, it is thought advisable to place the arithmetic lesson after the grammar lesson, so that the study learned at home will be grammar instead of arithmetic. It is found by experience that if mathematical problems are taken home for solution two bad habits arise, namely, in one case, the pupil gets assistance from his parents or others, and thereby loses to some extent his own power of overcoming difficulties by brave and persistent attacks unaided by others; the other evil is a habit of consuming long hours in the preperation of a lesson that should be prepared in thirty minutes, if all the powers of mind are fresh and at command. An average child may spend three hours in the preparation of an arithmetic lesson. Indeed, in repeated efforts to solve one of the so-called "conundrums," a whole family may spend the entire evening. One of the unpleasant results of the next day is that the teacher who conducts the lesson never knows the exact capacity and rate of progress of his pupils; in the recitation he probes the knowledge and preparation of the pupil, plus an unknown amount of preparatory work borrowed from parents and others. He even increases the length of the lessons, and requires more work at home, when the amount already exceeds the unaided capacity of the pupil.

The lessons should be arranged so as to bring in such exercises as furnish relief from intellectual tension between others that make large demands on the thinking powers. Such exercises as singing and calisthenics, writing and drawing, also reading, are of the nature of a relief from those recitations that tax the memory, critical alertness, and introspection, like arithmetic, grammar, and history.

Your Committee has not been able to agree on the question whether pupils who leave school early should have a course of study different from the course of those who are to continue on into secondary and higher work. It is contended, on the one hand, that those who leave early should have a more practical course, and that they should dispense with those studies that seem to be in the nature of preparatory work for secondary and higher education. Such studies as algebra and Latin, for example, should not be taken up unless the pupil expects to pursue the same for a sufficient time to complete the secondary course. It is replied on the other hand, that it is best to have one course for all, because any school education is at best but an initiation for the pupil into the art of learning, and that wherever he leaves off in his school course he should continue, by the aid of the public library and home study, in the work of mastering science and literature. It is further contended that a brief course in higher studies, like Latin and algebra, instead of being useless, is of more value than any elementary studies that might replace them. The first ten lessons in algebra give the pupil the fundamental idea of the general expression of arithmetical solutions by means of letters and other symbols. Six months study of it gives him the power to use the method in stating the manifold conditions of a problem in partnership, or in ascertaining a value that depends on several transformations of the data given. It is claimed, indeed, that the first few lessons in any branch are relatively of more educational value than an equal number of subsequent lessons, because the fundamental ideas and principles of the new study are placed at the beginning. In Latin, for instance, the pupil learns in his first week's study the to him strange phenomenon of a language that performs by inflections what his own language performs by the use of prepositions and auxiliaries. He is still more surprised to find that the order of words in a sentence is altogether different in Roman usage from that to which he is accustomed. He further begins to recognize in the Latin words many roots or stems which are employed to denote immediate sensuous objects, while they have been adopted into his English tongue to signify fine shades of distinction in thought or feeling. By these three things his powers of observation in matters of language are armed, as it were, with new faculties. Nothing that he has hitherto learned in grammar is so radical and far reaching as what he learns of his first week's study of Latin. The Latin arrangement of words in a sentence indicates a different order of mental arrangement in the process of apprehension and expression of thought. This arrangement is rendered possible by declensions. This amounts to attaching prepositions to the ends of the words, which they thus convert into adjectival or adverbial modifiers; whereas the separate prepositions of the English must indicate by their position in the sentence their grammatical relation. These observations, and the new insight into the etymology of English words having a Latin derivation, are of the nature of mental seeds which will grow and bear fruit throughout life in the better command of one's native tongue. All this will come from a very brief time devoted to Latin in school.

Amount of time for each branch.

Your Committee recommends that an hour of sixty minutes each week be assigned in the program for each of the following subjects throughout the eight years: Physical culture, vocal music, oral lessons in natural science (hygiene to be included among the topics under this head), oral lessons in biography and general history, and that the same amount of time each week shall be devoted to drawing from the second year to the eighth inclusive; to manual training during the seventh and eighth years so as to include sewing and cookery for the girls, and work in wood and iron for the boys.

Your Committee recommends that reading be given at least one lesson each day for the entire eight years, it being understood, however, that there shall be two or more lessons each day in reading in the first and second years, in which the recitation is necessarily very short, because of the inability of the pupil to give continued close attention, and because he has little power of applying himself to the work of preparing lessons by himself. In the first three years the reading should be limited to pieces in the colloquial style, but selections from the classics of the language in prose and in poetry shall be read to the pupil from time to time, and discussions made of such features of the selections read as may interest the pupils. After the third year, your Committee believes that the reading lesson should be given to selections from classic authors of English, and that the work of the recitation should be divided between (*a*) the elocution, (*b*) the grammatical peculiarities of the language, including spelling, definitions, syntactical construction, punctuation, and figures of prosody, and (*c*) the literary contents, including the main and accessory ideas, the emotions painted, the deeds described, the devices of style to produce a strong impression on the reader. Your Committee wishes to lay emphasis on the importance of the last item—that of literary study—which should consume more and more of the time of the recitation from grade to grade in the period from the fourth to the eighth year. In the fourth year and previously the first item—that of elocution, to secure distinct enunciation and correct pronunciation—should be most prominent. In the fifth and sixth years the second item—that of spelling, defining, and punctuation — should predominate slightly over the other two items. In the years from the fifth to the eighth there should be some reading of entire stories, such as Gulliver's Travels, Robinson Crusoe, Rip Van Winkle, The Lady of the Lake, Hiawatha, and similar stories adapted in style and subject-matter to the capacity of the pupils. An hour should be devoted each week to conversations on the salient points of the story, its literary and ethical bearings.[55]

[55] It seems pretty evident that this report regards the text-book in reading as the chief source of material for the study of literature in elementary grades. There is a phase of literature study that is analytic and another in which synthesis is the leading movement. For the former the suggestions in this report are worthy of universal approval. The selections in Appleton's Fourth Reader indicate the grade of literature that the author has in mind. The writer has known a thoughtful teacher to spend six weeks in the study of "The Bare-foot Boy." The author of this report would not approve of that, to be sure, but one can gain from the outlines of study appended to the selections in Appleton's Fourth and Fifth readers the sort of study he has in view. There is a large class of very thoughtful teachers who do not find in this sort of study all or nearly all that the school should do to cultivate a taste for good reading. But they generally stand firm in

Your Committee agrees in the opinion that in teaching language care should be taken that the pupil practices much in writing exercises and original compositions. At first the pupil will use only his colloquial vocabulary, but as he gains command of the technical vocabularies of geography, arithmetic, and history, and learns the higher literary vocabulary of his language, he will extend his use of words accordingly. Daily from the first year the child will prepare some lesson or portion of a lesson in writing. Your Committee has included under the head of oral grammar (from the first to the middle of the fifth year) one phase of this written work devoted to the study of the literary form and the technicalities of composition in such exercises as letter writing, written reviews of the several branches studied, reports of the oral lessons in natural science and history, paraphrases of the poems and prose literature of the readers, and finally compositions or written essays on suitable themes assigned by the teacher, but selected from the fields of knowledge studied in school. Care should be taken to criticise all paraphrases of poetry in respect to the good or bad taste shown in the choice of words; parodies should never be permitted.[26]

It is thought by your Committee that the old style of

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the conviction that the reader should have the most prominent place as material for use in teaching the children language and literature. The pupil must learn how to study masterpieces by an analytic method in which the isolation of parts prepares for their final unity. But too much of this analysis has the general effect of the grammatical analysis and parsing of "The Lady of the Lake." There should be an equal amount of study of literature in which synthesis is the leading process. Here the mastery of the content is the leading purpose and the study of the form is incidental. It is but slowly that a child grows into an appreciation of the form in literary masterpieces. But the ethical and thought content they can master sooner and it is by way of the mastery of these that they eventually come into an appreciation of the beauty of form. The reader is in the schools for all time. It is equally important that other literary masterpieces, and in the lower grades, juvenile literature, be read with only so much analytic study as will make sure of the meaning and leave the beauty of form to produce what effect it may.

[26] In interpreting this paragraph the reader must be careful to distinguish between *paraphrase* and *parody*. The latter is never to be encouraged. The former is of doubtful value except when employed for the purpose named in the report.

composition writing was too formal. It was kept too far away from the other work of the pupil. Instead of giving a written account of what he had learned in arithmetic, geography, grammar, history, and natural science, the pupil attempted artificial descriptions and reflections on such subjects as "Spring," "Happiness," "Perseverence," "Friendship," or something else outside of the line of his school studies.

Your Committee has already expressed its opinion that a good English style is not to be acquired by the study of grammar so much as by familiarity with great masterpieces of literature. We especially recommend that pupils who have taken up the fourth and fifth readers, containing the selections from great authors, should often be required to make written paraphrases of prose or poetic models of style, using their own vocabulary to express the thoughts so far as possible, and borrowing the *recherche* words and phrases of the author, where their own resources fail them. In this way the pupil learns to see what the great author has done to enrich the language and to furnish adequate means of expression for what could not be presented in words before, or at least not in so happy a manner.

Your Committee believes that every recitation is, in one aspect of it, an attempt to express the thoughts and information of the lesson in the pupil's own words, and thus an initial exercise in composition. The regular weekly written review of the important topics in the several branches studied is a more elaborate exercise in composition, the pupil endeavoring to collect what he knows and to state it systematically and in proper language. The punctuation, spelling, syntax, penmanship, choice of words, and style should not, it is true, be made a matter of criticism in connection with the other lessons, but only in the language lesson proper. But the pupil will learn language, all the same, by the written and oral recitations. The oral grammar lessons from the first year to the middle of the fifth year, should deal chiefly with the use of language, gradually introducing the grammatical technique as it is needed to describe accurately the correct forms and the usages violated.

Your Committee believes that there is some danger of wasting the time of the pupil in these oral and written language lessons in the first four years by confining the work of the pupil to the expression of ordinary commonplace ideas not related to the subjects of his other lessons, especially when the expression is confined to the colloquial vocabulary. Such training has been severely and justly condemned as teaching what is called prating or gabbling, rather than a noble use of English speech. It is clear that the pupil should have a dignified and worthy subject of composition, and what is so good for his purpose as the themes he has tried to master in his regular lessons? The reading lessons will give matter for literary style, the geography for scientific style, and the arithmetic for a business style; for all styles should be learned.

Your Committee recommends that selected lists of words difficult to spell be made from the reading lessons and mastered by frequent writing and oral spelling during the fourth, fifth, and sixth years.

Your Committee recommends that the use of a text-book in grammar begin with the second half of the fifth year, and continue until the beginning of the study of Latin in the eighth grade, and that one daily lesson of twenty-five or thirty minutes be devoted to it.*

For Latin we recommend one daily lesson of thirty minutes for the eighth year. For arithmetic we recommend number work from the first year to the eighth, one lesson each day, but the use of the text-book in number should not, in our opinion, begin until the first quarter of the third year. We recommend that the applications of elementary algebra to arithmetic, as hereinbefore explained, be substituted for pure arithmetic in the seventh and eighth years, a daily lesson being given.

Your committee recommends that penmanship as a separate branch be taught in the first six years at least three lessons per week.[37]

Geography, in the opinion of your Committee, should begin with oral lessons in the second year, and with a text-book in the

[37] There is too much time wasted on teaching penmanship in our graded schools. This recommendation that penmanship as a separate branch cease with the sixth grade ought to be adopted. The writer recently visited an eighth grade taught by the principal of a large building in one of the prominent smaller cities of the central states. He was a good teacher of long experience and taught penmanship by the approved methods, using a good deal of practice paper, the pupils putting

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* See comment on a preceding page.

third quarter of the third year, and be continued to the close of the sixth year with one lesson each day, and in the seventh and eighth years with three lessons per week.*

History of the United States with the use of a text-book, your Committee recommends for the seventh and the first half of the eighth year, one lesson each day; the Constitution of the United States for the third quarter of the eighth year.

The following schedule will show the number of lessons per week for each quarter of each year:

Reading. Eight years, with daily lessons.
Penmanship. Six years, ten lessons per week for first two years, five for third and fourth, and three for fifth and sixth.
Spelling Lists. Fourth, fifth, and sixth years, four lessons per week.
Grammar. Oral, with composition or dictation, first year to middle of fifth year, text-book from middle of fifth year to close of seventh year, five lessons per week. (Composition writing should be included under this head. But the written examinations on the several branches should be counted under the head of composition work.)
Latin or French or German. Eighth year, five lessons per week.
Arithmetic. Oral first and second year, text-book third to sixth year, five lessons per week.
Algebra. Seventh and eighth year, five lessons per week.
Geography. Oral lessons second year to middle of third year, text-book from middle of third year, five lessons weekly to seventh year, and three lessons to close of eighth.
Natural Science and Hygiene. Sixty minutes per week, eight years.
History of United States. Five hours per week seventh year and first half of eighth year.
Constitution of United States. Third quarter in the eighth year.
General History and Biography. Oral lessons, sixty minutes a week, eight years.
Physical Culture. Sixty minutes a week, eight years.
Vocal Music. Sixty minutes a week, eight years.
Drawing. Sixty minutes a week, eight years.
Manual Training, Sewing, and Cooking. One-half day each week in seventh and eighth years.

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their best efforts on the copy-book—a few lines at each lesson. The school had been doing this for eight months and had that day finished the copy-books. On inspection of the books its was discovered that in three cases in four, and, probably in five cases in six, the first page written last September was distinctly better in every respect than the last pages written in the following May. Sixty hours or twelve solid days of the school time of the year had been worse than wasted. The pupils all wrote well enough in September. It is quite probable that they wrote well enough when they finished the sixth grade. Let this excellence be maintained in the written exercises of the school and use the writing hour for something else.

Your Committee recommends recitations of fifteen minutes in length in the first and second years, of twenty minutes in length in the third and fourth years, of twenty-five minutes in the fifth and sixth years, and of thirty minutes in the seventh and eighth.

The results of this program show for the first and second years twenty lessons a week of fifteen minutes each, besides seven other exercises occupying an average of twelve minutes apiece each day; the total amount of time occupied in the continuous attention of the recitation or class exercises being twelve hours, or an average of two hours and twenty-four minutes per day.

For the third year twenty lessons a week of twenty minutes each, and five general exercises taking up five hours a week or an average of one hour per day, giving an average time per day of two hours and twenty minutes for class recitations or exercises.

In the fourth the recitations increase to twenty-four (by reason of four extra lessons in spelling) and the time occupied in recitations and exercises to thirteen hours and an average per day of two hours and thirty-six minutes.

BRANCHES.	*1st year*	*2d year*	*3d year*	*4th ye'r*	*5th ye'r*	*6th ye'r*	*7th ye'r*	*8th ye'r*
Reading.........	10 lessons a w'k		5 lessons a week					
Writing.	10 lessons a w'k		5 lessons a week		3 lessons a week			
Spelling Lists...				4 lessons a week				
English Grammar	Oral, with composition lessons				5 lessons a week with text–book			
Latin								5 les'ns
Arithmetic......	Oral, 60 minutes a week		5 lessons a week with text-book					
Algebra.........							5 lessons a week	
Geography......	Oral, 60 min'ts a week		*5 lessons a week with text-book				3 lessons a week	
Natural Science +Hygiene	Sixty minutes a week							
U. S. History....							5 lessons a week	
U. S. Constitut'n								*5 les.
General History.	Oral. sixty minutes a week							
Physical Culture	Sixty minutes a week							
Vocal Music...	Sixty minutes a week divided into four lessons							
Drawing.......	Sixty minutes a week							
Manual Train. or Sewing+ Cookery							One-half day ea.	
No. of Lessons..	20+7 daily exer.	20+7 daily exer.	20+5 daily exer.	24+5 daily exer.	27+5 daily exer.	27+5 daily exer.	23+6 daily exer.	23+6 daily exer.
Total Hours of Recitations	12	12	11⅔	13	16¼	16¼	17½	17½
Length of Recitations	15 min.	15 min.	20 min.	20 min.	25 min.	25 min.	30 min.	30 min.

*Begins in second half year

In the fifth and sixth years the number of recitations increases to twenty-seven per week, owing to the addition of formal grammar, and the total number of hours required for all is 16¼ per week, or an average of 3¼ per day.

In the seventh and eighth years the number of lessson decreases to twenty-three, history being added, penmanship and special lessons in spelling discontinued, the time devoted to geography reduced to three lessons a week. But the recitation is increased to thirty minutes in length. Manual training occupies a half day, or 2½ hours, each week. The total is 19 hours per week or 3⅘ per day.

The foregoing tabular exhibit shows all of these particulars.

IV. METHODS AND ORGANIZATION.

Your Committee is agreed that the time devoted to the elementary school work should not be reduced from eight years, but they have reccommended, as hereinbefore stated, that in the seventh and eighth years a modified form of algebra be introduced in place of advanced arithmetic, and that in the eighth year English grammar yield place to Latin. This makes, in their opinion, a proper transition to the studies of the secondary school and is calculated to assist the pupil materially in his preparation for that work. Hitherto, the change from the work of the elementary school has been too abrupt, the pupil beginning three formal studies at once, namely algebra, physical geography, and Latin.

Your Committee has found it necessary to discuss the question of methods of teaching in numerous instances, while considering the question of educational values and programs, because the value and time of beginning of the several branches depends so largely on the method of teaching.

The following recommendations, however, remain for this part of their report:

They would recommend that the specialization of teacher's work should not be attempted before the seventh or eighth year of the elementary school and in not more than one or two studies then. In the secondary school it is expected that a teacher will teach one or at most two branches. In the elementary school, for at least six years, it is better, on the whole, to have each teacher instruct his pupils in all the branches that they study, for the reason that only in this way can he hold an even pressure on the requirements of work, correlating it in such a manner that no one study absorbs undue attention. In this way the pupils prepare all their lessons under the direct supervision of the same teacher, and by their recitations show what defects of methods of study there have been in the preparation.

The ethical training is much more successful under this plan, because the personal influence of a teacher is much greater when he or she knows minutely the entire scope of the school work. In the case of the special teacher the responsibility is divided and the opportunities of special acquaintance with character and habits diminished.[38]

With one teacher who supervises the study and hears all the recitations, there is a much better opportunity to cultivate the two kinds of attention. The teacher divides his pupils into two classes and hears one recite while the other class prepares for the next lesson. The pupils reciting are required to pay strict attention to the one of their number who is explaining the point assigned him by the teacher—they are to be on the alert to notice any mistakes of statement or omissions of important data, they are at the same time to pay close attention to the remarks of the teacher. This is one kind of attention which may be called associated critical attention. The pupils engaged in the preparation of the next lesson are busy, each one by himself, studying the book and mastering its facts and ideas, and comparing them one with another, and making the effort to become oblivious of their fellow-pupils, the recitation going on, and the teacher. This is another kind of attention, which is not associated, but an individual effort to master for one's self without aid a prescribed task and to resist all distracting influences. These two disciplines in attention are the best formal training that the school affords.[39]

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[38] This is a brief but very satisfactory disposition of the question of specialization in teaching in the elementary schools. It is not best for either teacher or pupils that specialization shall prevail below the high school.

[39] This paragraph disposes of the craze for that "individualism" in teaching which discards class exercises. The distinction between indi-

Your committee has already mentioned a species of faulty correlation wherein the attempt is made to study all branches in each, misapplying Jacotot's maxim, "all is in all" (*tout est dans tout*).

A frequent error of this kind is the practice of making every recitation a language lesson, and interrupting the arithmetic, geography, history, literature, or whatever it may be, by calling the pupil's attention abruptly to something in his forms of expression, his pronunciation, or to some faulty use of English; thus turning the entire system of school work into a series of grammar exercises and weakening the power of continuous thought on the objective contents of the several branches, by creating a pernicious habit of self-consciousness in the matter of verbal expression. While your Committee would not venture to say that there should not be some degree of attention to the verbal expression in all lessons, it is of the opinion that it should be limited to criticism of the recitation for its want of technical accuracy. The technical words in each branch should be discussed until the pupil is familiar with their full force. The faulty English should be criticised as showing confusion of thought or memory, and should be corrected in this sense. But solecisms of speech should be silently noted by the teacher for discussion in the regular language lesson.[40]

The question of promotion of pupils has occupied from time to time very much attention. Your Committee believes that in many systems of elementary schools, there is injury done by too much formality in ascertaining whether the pupils of a

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vidualistic attention and associated attention is here well set forth. Individualism in teaching seems to rest upon the false theory that a person as individual has nothing in common with his fellows. On the contrary, what he has in common with others is the largest and best part of him as individual. The individual is the "undivided" self, and the self is both universal and particular; both many and one; both man and a man.

[40] No more important suggestion as to method of teaching has been made in this report. The divided attention of the pupil between the thing to be said and the manner of saying it, when the pupil is called upon to do his best thinking, is one of the worst evils in many good schools. When the pupil is merely reciting what he has already in mind he can be held to strict responsibilty for the form in which he expresses it.

given class have completed the work up to a given arbitrarily fixed point, and are ready to take up the next apportionment of the work. In the early days of city school systems, when the office of superintendent was first created, it was thought necessary to divide up the graded course of study into years of work, and to hold stated annual examinations to ascertain how many pupils could be promoted to the next grade or year's work. All that failed at this examination were set back at the beginning of the year's work to spend another year in reviewing it. This was to meet the convenience of the superintendent who, it was said, could not hold examinations to suit the wants of individuals or particular classes. From this arrangement there naturally resulted a great deal of what is called "marking time." Pupils who had nearly completed the work of the year were placed with pupils who had been till now a year's interval below them. Discouragement and demoralization at the thought of taking up again a course of lessons learned once before caused many pupils to leave school permaturely.

This evil has been remedied in nearly one-half of the cities by promoting pupils whenever they have completed the work of a grade. The constant tendency of classification to become imperfect by reason of the difference in rates of advancement of the several pupils, owing to disparity in ages, degree of maturity, temperament, and health, makes frequent reclassification necessary. This is easily accomplished by promoting the few pupils who distance the majority of their classmates into the next class above, separated as it is or ought to be, by an interval of less than half a year. The bright pupils thus promoted have to struggle to make up the ground covered in the interval between the two classes, but they are nearly always able to accomplish this, and generally will in two year's time need another promotion from class to class.

The procrustean character of the old city systems has been removed by this device.

There remain for mention some other evils besides bad systems of promotion due to defects of organization. The school buildings are often with superstitious care kept apart exclusively for particular grades of pupils. The central building erected for high school purposes, though only half filled, is not made to relieve the neighboring grammar school, crowded to such a degree that it cannot receive the classes which ought to be promoted from the primary schools. It has happened in such cases that this superstition prevailed so far that the pupils in the primary school building were kept at work on studies already finished, because they could not be transferred to the grammar school.

In all good school systems the pupils take up new work when they have completed the old, and the bright pupils are transferred to higher classes when they have so far distanced their fellows that the amount of work fixed for the average ability of the class does not give them enough to do.

In conclusion your Committee would state, by way of explanation, that it has been led into many digressions, in illustrating the details of its recommendations in this report, through its desire to make clear the grounds on which it has based its conclusions and through the hope that such details will call out a still more thorough-going discussion of the educational values of branches proposed for elementary schools, and of the methods by which those branches may be successfully taught.

With a view to increase the interest in this subject your Committee recommends the publication of selected passages from the papers sent in by invited auxiliary committees and by volunteers, many of these containing valuable suggestions not mentioned in this report.[41]

WILLIAM T. HARRIS, *Chairman*,
United States Commissioner of Education, Washington, D.C.

I dissent from the majority report of the Committee in regard to the following points:

Arithmetic.

1. *As to fractions:* In teaching arithmetic there does not exist any greater difficulty in getting small children to grasp

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[41] It is an interesting fact that the chairman is the only member of the committee who signed this report without dissenting from some of its doctrines. It will be observed that the non-concurrence of the other members of the committee is not in the estimate made of the educational values of the studies so much as in the method suggested for realizing these values in the school.

the nature of the fraction as such than in getting them to grasp the idea of the simpler whole numbers. It is true that the fractions $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc., as symbols, are a little more complex than are the single digits; but as to the real meaning, when once the fractional idea has been properly developed by the teacher and the significance of the idea apprehended by the pupil, it is as easily understood as any other simple truth. Children get the idea of *half*, *third*, or *quarter* of many things long before they enter school, and they will as readily learn to add, subtract, multiply, and divide fractions as they will whole numbers. In using fractions they will draw diagrams and pictures representing the processes of work as quickly and easily as they illustrate similar work with integers. It is of course assumed that the teacher knows how to teach arithmetic to children, or rather, how to teach the children how to teach themselves. There is really no valid argument why children in the second, third, and fourth years in school should not master the fundamental operations in fractions. Not only this, they will put the more common fractions into the technique of percentage, and do this as well in the second and third grades as at any other time in their future progress. There is only one new idea involved in this operation, and that consists in giving an additional term—per cent—to the fractional symbol. When one number is a part of another, it may be regarded as a fractional part or as such a per cent of it. A great deal of percentage is thus learned by the pupils early in the course. Children are not hurt by learning. Standing still and lost motion kill.

Every recitation should reach the full swing of the learner's mind, including all his acquisitions on any given topic. But if the teaching of fractions be deferred, as it usually is in most schools, the time may be materially shortened by teaching addition and subtraction of fractions together. This is simple enough if different fractions having common denominators are used at first, such as $\frac{6}{9}+\frac{5}{9}=?$, and $\frac{6}{8}-\frac{5}{8}=?$ Then the next step, after sufficient drill on this case, is to take two fractions (simple) of different units of value, as $\frac{1}{2}+\frac{1}{3}=?$, and $\frac{1}{2}-\frac{1}{3}=?$ Multiplication and division may be treated similarly.

In decimals, the pupil is really confronted by a simpler form of fractions than the varied forms of common fractions.

Devices and illustrations of a material kind are necessary to build up in the pupil's mind at the beginning a clear concept of a tenth, etc., etc., and then to show that *one-tenth* written as a decimal is only a short handway of writing $\frac{1}{10}$ as a common fraction, and so on. He sees very soon that the decimal is only a shorthand common fraction, and this notion he must hold to. This is the vital point in decimals. The idea that they can be changed into common fractions and the reverse at will, establishes the fact in the pupil's mind that they are common fractions and not uncommon ones. Fixing the decimal point will, in a short time, take care of itself.

In teaching arithmetic the steps are: (1) developing the subject till each pupil gets a clear conception of it; (2) necessary drill to fix the process; (3) connecting the subject with all that has preceded it; (4) its applications; (5) the pupils ability to sum up clearly and concisely what he has learned.*

2. *As to abridgment:* Under this head, I hold that a course in arithmetic, including simple numbers, fractions, tables of weights and measures, percentage and interest, and numerical operations in powers, does not fit a pupil to begin the study of algebra. That while he may carry the book under his arm to the schoolroom, he is too poorly equipped to make headway on this subject, and instead of finishing up algebra in a reasonable length of time he is kept too long at it, with a strong probability of his becoming disgusted with it.

There are subjects, however, in the common school arithmetic that may be dropped out to great advantage, to-wit, all but the simplest exercises in compound interest, foreign exchange, all foreign moneys (except reference tables of values,) annuities, alligation, progression; and the entire subjects of percentage and interest should be condensed into about twenty pages.

Cancellation, factoring, proportion, evolution, and involution should be retained. Cancellation and factoring should be strongly emphasized owing to their immense value in shortening work in arithmetic, algebra, and in more advanced subjects. Some drill in the Metric System should not be omitted.

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* See comment on a preceding page.

3. *As to mental arithmetic:* Till the end of the fourth year the pupil does not need a text-book of mental arithmetic. So far his work in arithmetic should be about equally divided between written and mental. At the beginning of the fifth year, in adition to his written arithmetic, he should begin a mental arithmetic and continue it three years, reciting at least four mental arithmetic lessons each week. The length of the recitation should be twenty minutes. A pupil well drilled in mental arithmetic at the end of the seventh year, if the school age begins at six, is far better prepared to study algebra than the one who has not had such a drill. There are a few problems in arithmetic that can be solved more easily by algebra than by the ordinary processes of arithmetic, but there are many numerical problems in equations of the first degree that can be more easily handled by mental arithmetic than by algebra. To attack arithmetical problems by algebra is very much like using a tremendous lever to lift a feather. Those who have found a great stumbling-block in arithmetical "conundrums," have, if the inside facts were known, been looking in the wrong direction. A deficiency of "number-brain-cells" will afford an adequate explanation.

4. *Rearrangement of subjects*: There should be a rearranging of the topics in arithmetic so that one subject naturally leads up to the next. As an illustration, it is easily seen that whole numbers and fractions can be treated together, and that with United States money, when the *dime* is reached is the proper time to begin decimals, and that when "a square" in surface measure first comes up, the next step is the *square* of a number as well as its *square root*, and that solid measure logically lands the learner among cubes and cube-roots. When he learns that 1728 cubic inches make one cubic foot he is prepared to find the edge of the cube. What is meant here is pointing the way to the next above. All depends upon the teacher's ability to lead the pupil to see conditions and relations. My contention is that truth, so far as one is capable of taking hold of it when it is properly presented, is always a simple affair.

5. *As to algebra:* If algebra be commenced at the middle of the seventh year, let the pupil go at it in earnest, and keep at it till he has mastered it. Here the best opportunities will be afforded him to connect his algebraic knowlege to his arithmetical knowledge. He builds the one on top of the other. The skillful teacher always insists that the learner shall establish and maintain this relationship between the two subjects. To switch around the other way appears to me to be the same as to omit certain exercises in the common algebra, because they are more briefly and elegantly treated in the calculus. It is admitted that a higher branch of mathematics often throws much light on the lower branches, but these side-lights should be employed for the purpose of leading the learner onward to broader generalizations. Unless one sees the lower clearly, the higher is obscure. Build solidly the foundation on arithmetic—written and mental—and the higher branches will be more easily mastered and time saved.

History of the United States.

In teaching this branch in the public schools, there does not appear, so far as I can see, any substantial reason why the pupils should not study and recite the history of the Rebellion in the same manner that they do the Revolutionary War. The pupils discuss the late war and the causes that led to it with an impartiality of feeling that speaks more for their good sense and clear judgment than any other way by which their knowledge can be tested. They may not get hold of all the causes involved in that conflict, but they get enough to understand the motives which caused the armies to fight so heroically, and why the people, both North and South, staked everything on the issue. Just as the men who faced each other for four years and met so often in a death grapple will sit down now and quietly talk over their trials, sufferings, and conflicts, so do their children talk over these same stirring scenes. They, too, so far as my experience extends, are singularly free from bitterness and prejudice. It is certainly a period of history that they should study.

The spelling-book.

In addition to the "spelling-lists," I would supplement with a good spelling-book. So far, no "word-list," however well selected, has supplied the place of a spelling-book. All those schools that threw out the spelling-book and undertook to teach spelling incidentally or by word-lists failed, and for the same reason that grammar, arithmetic, geography, and other branches, cannot be taught incidentally as the pupil or the class reads Robinson Crusoe, or any other similar work. It is an independent study and as such should be pursued.

JAMES M. GREENWOOD,
Superintendent of Schools, Kansas City, Mo.

While affixing my signature to the report of this Committee as expressing substantial agreement with most of its leading propositions, I beg leave also to indicate my dissent from certain of its recommendations and to suggest certain additions which, in my judgment, the report requires.

1. There are other forms of true correlation which should be included with the four mentioned in the first part of the report and which should be as clearly and fully treated as are these four.

The first is that form of correlation which is popularly understood by the name, and which is also called by some writers, concentration, co-ordination, unification, and alludes in general to a division of studies into content and form; by content meaning that upon which it is fitting that the mind of the child should dwell, and by form the means or modes of expression by which thoughts are communicated. Or, it may be thus expressed: The true content of education is, (1), philosophy or the knowledge of man as to his motives and hidden springs of action indicated in history and literature, and (2), science, the knowledge of nature and its manifestations and laws. Its form is art, which is the deliberate, purposeful, and effective expression to others of that which has been produced within man by contact with other men and with nature, and is commonly referred to as divided into various arts, such as reading, writing, drawing, making, and modeling. The relation of content and form is that of principle and subordinate, the latter receiving its chief value from the former. In a true education they are so presented to the mind of the child that he instinctively and unconsciously grasps this relation and is thereby lifted into a higher plane of thinking and living than if the various arts are taught, as they too commonly are, without reference to a noble content. This relation of form to content is vaguely referred to in the report, but nowhere definitely treated. It seems to me that it is a true form of correlation, and, as such, deserves special and definite treatment. Moreover, it is at present much in the minds of the teachers of this country, often in forms that are misleading and harmful. The fact that it adds the important element of interest to the dry details of common school life makes it especially attractive to progressive and earnest teachers, and this Committee should recognize its importance and make such an utterance upon it as will guide the average teacher to a clear comprehension of its meaning and to a wise use of it in the school-room.

Second, there is a still higher form of correlation which is definitely referred to later in the report as that "of the several branches of human learning in the unity of the spiritual view furnished by religion to our civilization." This in the report is assigned abolutely to the province of higher education. While I do not wish to dissent wholly from this view, since it is doubtless true that this higher unity cannot be comprehensively stated for the use of a child, yet a wise teacher can so present subjects to even a young child that a sense of the unity of all knowledge will, to a certain degree, be unconsciously developed in his mind. In regard to certain of the great divisions of human knowledge, this relation is so evident that they cannot be properly presented at all unless the relations be made clear. Such studies are history and geography.

2. The recommendations upon the subject of language should be broadened to cover the production of good English by the child himself, with the suggestion of suitable topics and proper methods. This report confines itself to the absorptive side of education and ignores that development of power over nature, man, and self, which comes from free exercise of facul-

ties and free expression of thought. The study of language as something for the child to use himself, the great means by which he is to assert his place in civilization, and exert his influence for good, is nowhere referred to except in the vaguest way. This statement in regard to language applies almost equally well to drawing, and here is made evident the importance of the form of correlation to which I have just referred. The proper material for the training of the child in expression is that which is furnished by the study of man and nature. His mind being filled with high themes, he asserts his individuality, expresses himself in regard to them, and thereby gains at once both a closer and clearer comprehension of what he has studied, and also the power by which he may become a factor in his generation.

3. I would wish to omit the word "weekly" where it occurs in the discussion of the subjects of general history and science, unless it be understood to mean that an amount of time in the school year equivalant to sixty minutes weekly be given to each of these subjects. It is often better to condense these studies into certain portions of the year, giving more time to them each week and using them as the basis, to a certain degree, of language work. I believe that, especially with young children, clearer concepts are produced by such connected study, pursued for fewer weeks, than by lessons seven days apart.

4. In my judgment manual training should not be limited to the seventh and eighth grades, but should begin in the kindergarten with the simple study of form from objects and the reproduction in paper of the objects presented, and should extend, in a series of carefully graded lessons, through all the grades, leaving, however, the heavier tools, such as the plane, for the seventh and eighth grades. By these means an interest is kept up in the various human industries, sympathy for all labor is created, and a certain degree of skill is developed; moreover the interest of the pupils in their school is greatly enhanced. Manual training has often proved the magnet by which boys at the restless age have been kept in school instead of leaving for some gainful occupation.

5. I desire to suggest that geometry may be so taught as to be a better mathematical study than algebra to succeed or ac-

company arithmetic in the seventh and eighth grades. I do not refer particularly to inventional geometry, to which the Committee accords a slighting attention, but to constructive geometry and the simplest propositions in demonstrative geometry, thus involving the comprehension of the elementary geometric forms and their more obvious relations. This study may be made of especial interest in connection with manual training and drawing, while it presents fewer difficulties to the immature mind than the abstractions of algebra, since it connects more directly with the concrete, by which its presentation may often be aided.

6. While agreeing fully with a majority of the Committee that the full scientific method should not be applied to the study of elementary science by young children, yet I am compelled to favor more of experimentation and observation by the child, and less of telling by the teacher than the report would seem to favor.

7. I would go farther than the majority of the Committee, and insist that, except in rare cases, there should be no specialization of the teaching force below the High School, and that even in the first years of the High School, so far as possible, specialization should be subordinated to a general care of the child's welfare and oversight of his methods of study, which are impossible when a corps of teachers give instruction, each in one subject, and see the student only during the hour of recitation.

8. While in the main I agree with the bald statements under the head "Correlation by synthesis of studies," since reference is made to only a very artificial mode of synthesis not at all in vogue in this country, I must dissent emphatically from this portion of the report as by inference condemning a most important department of correlation, to which I have referred earlier. The doctrine of concentration is not necessarily artificial; rather it refers to the higher unity, of which this Committee has spoken in glowing terms as belonging to the province of higher education. It also includes the division of the school curriculum into content and form, which this Committee inferentially adopts in its treatment of language. I do not believe, any more than do the majority of the Committee, that the entire course of study can be literally and exactly

centered about a single subject, nor do I believe in any artificial correlation; but there is a natural relation of all knowledges, which this Committee admits in various places, and which is the basis of a proper synthesis of studies, according to the psychological principal of apperception.

9. If by the term "oral," as applied to lessons in biography and in natural science, the Committee means, as the word would imply, that the instruction is to be given in the form of lectures by the teacher, I cannot in full agree with the Committee's conclusions. As I have already stated, in natural science the work should be largely that of observation, and in history and biography, while in the very lowest grades the teachers should tell the children stories, as soon as it is possible the desired information should be obtained by the student through reading. To this end the reading lesson in school should be properly correlated with his other studies, and he should be advised as to his home reading. The information thus obtained should be the subject of conversation in the class, and should furnish the material for much of the written language work of the children.

10. I must dissent emphatically and entirely from that portion of the report which recommends that a text-book in grammar be introduced into the fifth year of the child's school life. It is a question in my mind whether it would not be better if the text-book were not introduced into the grades below the High School at all. Certainly it should not appear before the seventh year. Such knowledge of grammar as will familiarize the child with the structure of the sentence, the basis of all language, and as will enable him to use correctly forms of speech which the necessities of expression require, should be given orally by the teacher in connection with the child's written work, when needed; but against the introduction of a text-book upon grammar, the most abstruse of all the subjects of the school curriculum, when the pupil is not more than ten years old, I must protest. Instead of that the child should devote much time, some every day, to writing upon proper themes in the best English he can command, furnishing occasion to the teacher to correct such errors as he may make. and acquiring by use acquaintance with the correct forms of grammar. If, as will doubtless be the case in most

cities, local conditions render the introduction of Latin into the eighth grade inadvisable, this study of grammar may be made in that grade somewhat more intensive.

11. If by a text-book in geography is meant that which is commonly understood by the term, and not simply geographical reading matter, in my judgment, it should not be introduced earlier than the fifth year.

These suggestions and expressions of dissent, if approved by the Committee, would necessitate some change in the program submitted, the most important of which would be the making room for the production of English in the grades. This could be provided in the first and second grades by taking some of the time devoted to penmanship and doing the work partly in connection with the reading classes. In the third and fourth grades it should take some of the time devoted to penmanship and should be studied also in connection with geography and reading, and in the fifth and sixth grades it should take all of the time given to grammar.

I regret to be compelled to express dissent upon so many points, but as most of them appear to me vital and as the differences appear to be not merely superficial but fundamental, affecting and affected by one's entire educational creed, I cannot do otherwise. To most of the report I most gladly give my assent and approval.

CHARLES B. GILBERT,
Superintendent of Schools, St. Paul, Minn.

I agree most heartily with the main features of the foregoing report of the sub-committee on correlation of studies. It is so admirable in its analysis of subjects and in its statement of comparative education values, and so suggestive in its practical applications to teaching, that I regret to find myself appearing in any way to dissent from its conclusions. Indeed my principal objection is not against anything contained in the report (unless it be against a possible inference which might be drawn at one point), but it refers rather to what seems to me to be an omission.

In addition to all the forms of correlation recommended in the report, it seems to me possible to make a correlation of subjects in a program in such way that the selection of subject-matter may be to some extent from all fields of knowledge. These selections should be such as are related to one another so as to be mutually helpful in acquisition. They should be the main features of knowledge in the different departments.

These different departments from which the chosen subjects should be taken must be fundamental ones and must be sufficiently numerous to represent universal culture. The report itself indicates conclusively what these are.

Reference is made in the report to various attempts that have been made to correlate subjects of study.

A very just criticism is made upon that attempt at correlation by the use of the story of Robinson Crusoe as a center of correlation. It is distinctly pointed out in the report that the experiences of Robinson Crusoe are lacking in many of the elements of universal culture, and in many elements of education needed to adjust the individual properly to the civilization of our time and country. It is equally evident that the attempt to make this story the center of correlation leads directly to trivial exercises in other subjects in order to make them "correlate" with Robinson Crusoe. It is also shown in the report that it naturally leads to fragmentary knowledge of many subjects very much inferior to that clear, logically connected knowledge of a subject which may be had by pursuing it without reference to correlating it with all others.

It is at this point that in my judgment a wrong inference is permitted by the report.

It does not, as it seems to me, follow that, because correlation based on Robinson Crusoe is a failure, all correlations having the same general purpose will necessarily prove failures. For my own part I do not believe that correlation needs any "center," outside the child and its natural activities. If, however, it seems wiser to give special prominence to any given field of acquisition, it should, in my judgment, be accorded to language and its closely related subjects—reading, spelling, writing, composing, study of literature, etc., etc. Indeed language as a mode of expression is organically related to thinking, in all fields of knowledge, as form is related to content. A "system" or "program" of correlation on this basis would seek for fundamental ideas in all the leading branches and make them themes of thought and occasions of language exercises. The selections would omit all trivialities in all subjects, and would not attempt to correlate for the mere sake of correlation; but would seek to correlate wherever by such correlation kindred themes may be made to illuminate one another. To illustrate, concrete problems in arithmetic would be sought that would clearly develop and illustrate mathematical ideas and their application; but in a secondary way these problems would be sought for in the various departments of concrete knowledge—geography, history, physics, chemistry, astronomy, meteorology, political, industrial, or domestic economy. But none of these themes would be so relied upon for problems as to compel one to choose unreasonable or trivial relations on which to base them. The problems themselves should represent true and important facts and relations of the other subjects as surely and rigidly as they should involve correct mathematical principles; and all such exercises should be rightly related to the child's education in language.

In like manner, when a child is engaged in nature study of any kind, some valuable problems in mathematics may be found rightly related both to the subject directly in hand and the child's natural progress in arithmetic. Also many of the lessons in nature study are directly related to some of the finest literature ever produced, in which analogies of nature are made the means of expression for the finest and most delicate of the human experiences. When the child has mastered the physical facts on which the literary inspiration is based is the true time to give him the advantage of the study of such literature. These ideas are not only rightly related to one another, but to the mind itself. It is, so to speak, the nascent moment when the mind can easily and fully master what might else remain an impenetrable mystery; and all because subjects and occasion have come into happy conjunction.

This is not the place in which to attempt any elaboration of such a system of correlation. But I feel that its absence from the report may make many persons feel that the latter, is so far incomplete. L. H. Jones,

Superintendent of Schools, Cleveland, O.

With the main lines of thought in this report I find myself in agreement. With many of its details, however, I am not in accord. I regret to have to express my dissent from its conclusions in the following particulars;

1. The report makes too little of the uses of grammar as supplying canons of criticism which enable the pupil to correct his own English, and as furnishing a key (grammatical analysis) that gives him the power to see the meaning of obscure or involved sentences.

2. For the study of literature; complete works are to be preferred to the selections found in school readers.

3. That species of language exercise known as paraphrasing I regard as harmful.

4. The study of number should not be omitted from the first year in school. Practice in the primary operations of arithmetic should not be omitted from the seventh and eighth years. The quadratic equation should be reserved for the High School.

5. The foreign language introduced into the elementary school course should be a modern language—French or German. Latin should be reserved for those who have time and opportunity to master its literature.

6. In the general programme of studies, the school day is cut up into too many short periods. The tendency of such a programme as that in the text would be to destroy repose of mind and render reflection almost an impossibility.

7. I desire to express my agreement with the opinions stated in Sections 2, 3, 6, and 9 of Mr. Gilbert's dissenting opinion; and, in the main, with what Mr. Jones says on the correlation of studies.

William H. Maxwell,
Superintendent of Schools, Brooklyn, N. Y.

EDITORIAL NOTE.

By permission of Dr. Harris, we have published his paper on "The Old Psychology vs. The New," as an appendix to this report. It will help the reader to understand better not only the discussion on psychology, but many other things pertaining to both theory and practice which the report contains.

APPENDIX.

THE OLD PSYCHOLOGY VS. THE NEW.

I understand that this question includes under the term "new psychology" only two classes of investigation, namely, what is known as "physiological psychology" dating from the discovery of Broca in 1861, and what is known as child-study, including the researches of Professor Preyer and of Dr. Stanley Hall, their co-workers and disciples.

All other studies of mind from ancient times to the present time, whether based on induction or deduction, whether *a priori* as rational psychology, or *a posteriori* as empirical psychology, should be called the "old psychology." It seems to me that both of these psychologies are of immense importance—that neither is a substitute for the other, or to be neglected by the teacher who wishes to know scientifically the mind that he is supposed to educate.

For I must hold that there is a constitution of the mind common to all rational beings—a rational nature which may be discovered by introspection and distinguished from the transient and variable characteristics which are determined in large manner by environment and conditions of development.

I would name as by far the most important knowledge from this source, the distinction of the soul into several stages as that manifested in plant life—called by Aristotle the nutritive or vegetable soul; the soul as active in sensation and locomotion, or the animal soul; the rational soul manifested in imagination, memory, reflection, and in pure thought. The distinction of active and passive reason made by Aristotle in his famous treatise on the soul and so often re-discovered or verified by profound thinkers in the history of philosophy—is the principle of this classification of soul-activities. On it is founded the philosophical doctrine of the immortality of the soul. In fact, not only the doctrine of immortality but also the doctrines of theism and the freedom of the will are based on this rock of the old psychology developed by Aristotle, out of the hints of Plato or Socrates. God, freedom, and immortality are the three good gifts of philosophy according to Novalis; they are all derived from the insight that finds in pure thought the independent self-activity of the soul and sees in it the only possible type of being for a first principle of the world—a Creator. The idea of self-activity is moreover the basal idea of free will.

The very concept of will is impossible on the basis of empirical thinking. For the understanding as Coleridge defined it deals with relations between objects, and finds causal relations everywhere but not self-activity or will. It tries to explain each thing through its environment—and it never rests until it has traced the phenomena of an object to a ground in something else outside.

That the fundamental condition of introspection is the admission of this idea of self activity is evident, if we consider that the world of self consciousness contains only feelings, volitions, and ideas. Each one of these is two-fold, implying subject and object. There are two poles to each; feeling is nothing unless it have a subject that feels, and unless the self that feels is the object of the feeling. So volition implies a self that acts, and moreover a determination or limitation of the subject issuing in an objective deed—a volition has the twofold aspect of subject and object. So, too, an idea is always thought as a determination of the self which thinks it—or defines it—it is conceived by the mind—it, too, involves subject and object.

Now, by no possibility can external observation discover any such twofold objects in space and time. All objects are dead results, or in a process of becoming through some external cause.

If we discriminate dead objects from living objects and recognize plants, animals, and men before us, we do it because we interpret the forms, shapes, and movements before us as indicative of a self-determining soul within the object. We transfer to the object by an act of inference, an internality of life, feeling, volition, or thought such as we know directly only by introspection, and can only know thus.

To expand this theme one would show the importance of these distinctions of Aristotle, Aquinas, and Leibnitz, in making an account of the spiritual life of man—an inventorying the principles of his civilization, and making clear and consistent his views of the world.

To live is one thing, but to give a rational and consistent account of one's life is a different and difficult matter. The old psychology succeeded in doing this by these fundamental distinctions, and all new attempts at psychology either prove abortive or else soon fall into line with the old psychology, so far as these essentials are concerned—they end in affirming self-activity as more substantial than material things, and in the admission of various grades of realization of this self-activity or soul.

Another very important step in this recognition of the contents of self-consciousness which the German thinkers have added to the old psychology is the recognition of the characteristic of universality and necessity as the criterion of what is in the constitution of mind itself as contra distinguished from experience or empirical content. By this time and space, the categories of quality and quanity, the laws of causality, identity and included middle, the ideas of self-activity, moral responsibility and religion, all transcend experience and are formed by introspection.

It is their application which constitutes experience, and experience would be impossible unless the mind had in itself these powers *a priori*, for these powers make experience possible. If we could not furnish the intuitions of infinite space and time, we could not perceive objects of experience—nor unless we could furnish the category of causality could we refer our sensations to objects as causes.

Universal and necessary ideas are furnished by the mind itself, and not derived from experience, although our consciousness of them may date from our application of them to the content of experience.

Formal logic, with its judgments and syllogisms, its figures and moods, should be regarded also as a part of rational psychology in so far as it reveals to us the forms of action of the thinking reason.

All these contributions of the old psychology are of priceless value as giving us the means to understand the place we occupy in the universe with our ideals of civilization. They furnish us directive power, they give us the regulative ideals of education, religion, jurisprudence, politics, and the general conduct of life.

But if the old psychology has furnished these substantial things, it has not furnished all that is desirable.

There is a realm of conditions which must be understood before man can be made to realize his ideals.

The product of nature is an animal, and not a civilized man. How can man react upon nature; how can he ascend out of his own natural conditions—how can he rise from the stage of sense-perception to that of reflection—how from mere reflection to mere thought—how can he put off his state of slavery to the category of thing and environment, and rise to the category of self-activity? This is to ask how can he ascend from a mechanical view of the world to an ethical view of it? Certainly he must know the bodily conditions that limit or enthrall the soul. He must be able to recognize what activity tends to fix the soul in a lower order of thought and action, and what exercise will tend to lift it to a higher order.

To enumerate some of these enthralling conditions through which the soul passes necessarily if it ever comes to the highest culture, we must name the influences and attractions of one's habitat, its climate and soil, its outlook, its means of connection with the rest of the world. Then next there is the race and stock of which one comes—black, red, yellow, or white; northern or southern-European, inheriting all the evil tendencies and all the good aspirations. Then the temperament and idiosincracy of the individual, as his natural talents or his genius; how deep these all lie as predetermining causes in his career! If he is alone the efficient cause or the free will—at least these conditions of habitat, race, and stock furnish the material that he is to quarry and build into the temple of his life—a Parthenon, a Pantheon, or only a mud hut or a snow house.

Then come other natural elements to be regarded—those of sex—the seven ages from infancy to senility—the physical conditions that belong to sleep and dreams and the waking state—the health and disease of the body—the insane tendencies—the results of habits in hardening and fixing the life of the individual in some lower round of activity.

Of all these, the laws of growth from infancy to mature age, especially concern the educator.

There is for man, as contrasted with lower animals, a long period of helpless infancy. Prof. John Fiske has shown the importance of this fact to the theory of evolution as applied to man. Basing his theory on some hints of Wallace and Spencer, he has explained how the differentiation of the primitive savage man from the animal groups must have been accomplished. Where psychical life is complex there is not time for all capacities to become organized before birth. The prolongation of helpless infancy is required for the development of man's adaptations to the spiritual environment implied in the habits and arts and modes of behavior of the social community into which man is born. He is born first as an infant body—he must be born second as an ethical soul or else he cannot become human. The conditions are of extreme complexity. This is the most important contribution of the doctrine of evolution to education. Doctor Nicholas Murray Butler has pointed out that the Greek philosopher Anaximander more than two thousand years ago spoke of the prolonged period of infancy as a reason for believing that in the beginning, man had an origin from animals of a different species from himself. The Greek did not perceive the relation of this prolonged infancy to the adjustment of the complex physical and spiritual activities of the child to his environment.

In the light of this discovery, we may see what an important bearing the results of child-study and physiological psychology will have on education. For is it not evident, that if the child is at any epoch of his long period of helplessness inured into any habit or fixed form of activity belonging to a lower stage of development, the tendency will be to arrest growth at that standpoint and make it difficult or next to impossible to continue the growth of the child into higher and more civilized forms of soul-activity.

A severe drill in mechanical habits of memorizing or calculating—any over cultivation of sense-perception in tender years, may so arrest the development of the soul at a mechanical method of thinking, and prevent the further growth into spiritual insight.

Especially on the second plane of thought, that which fol-